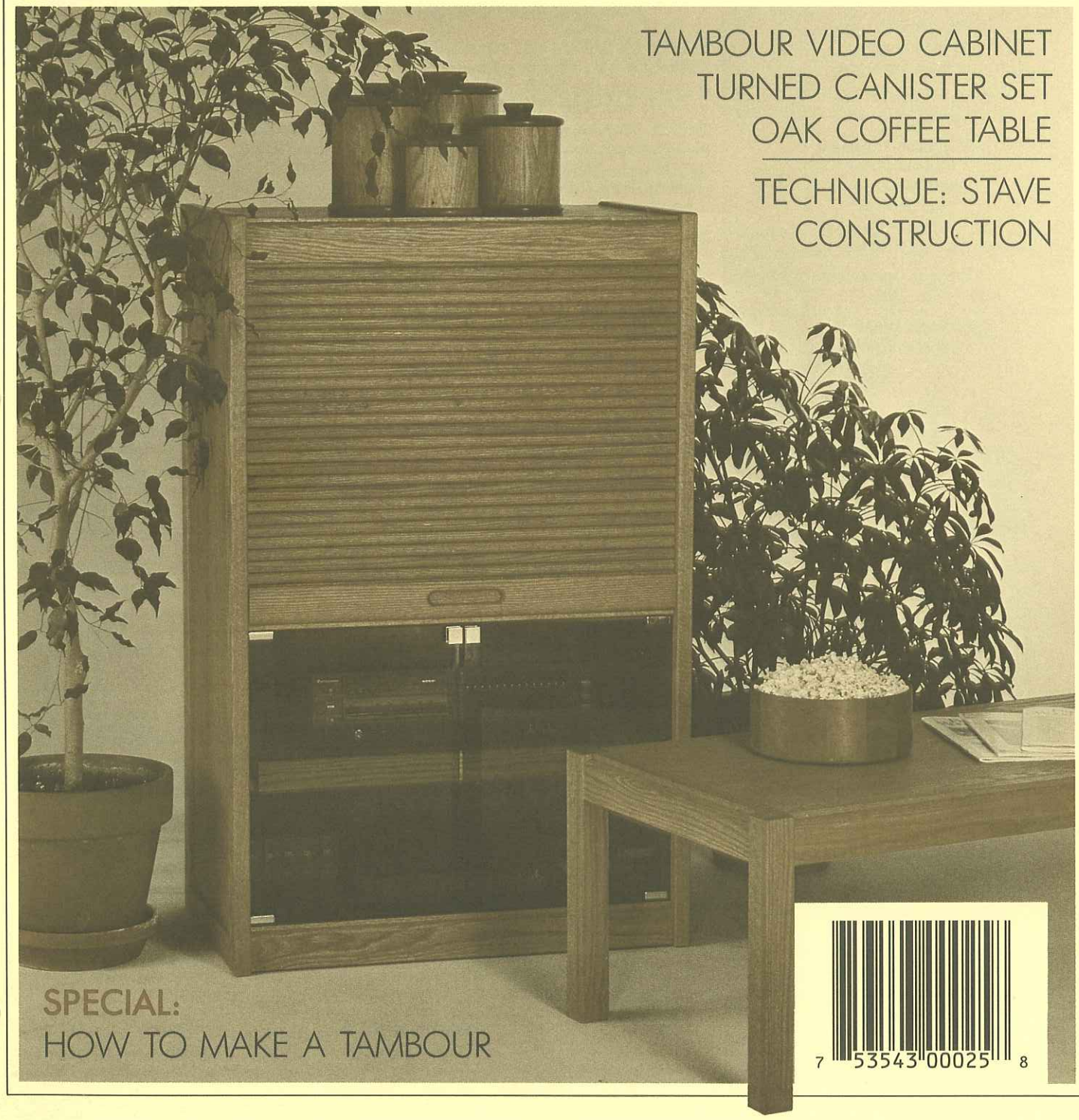
NO. 25 NOTES FROM THE SHOP

# Woodsmith®



TAMBOUR VIDEO CABINET
TURNED CANISTER SET
OAK COFFEE TABLE

TECHNIQUE: STAVE CONSTRUCTION

SPECIAL:
HOW TO MAKE A TAMBOUR

7 53543 00025 8

Woodsmith

Number 25 Jan./Feb., 1983

Editor
**Donald B. Peschke**

Design Director
**Ted Kralicek**

Assistant Editor
**Steve Krohmer**

Graphic Designers
**David Kreyling**
**Marcia Simmons**

Subscription Manager
**Sandy J. Baum**

Subscription Assistants
**Christel Miner**
**Vicky Robinson**
**Kim Melton**
**Jackie Stroud**
**Shirley Feltman**

Computer Operations
**Ken Miner**

Administrative Assistant
**Cheryl Scott**

**WOODSMITH** (ISSN 0164-4114) is published bimonthly (January, March, May, July, September, November) by Woodsmith Publishing Co., 2200 Grand Ave., Des Moines, Iowa 50312. **WOODSMITH** is a registered trademark of the Woodsmith Publishing Co.
**©Copyright 1983** by Woodsmith Publishing Co. All Rights Reserved.
Printed in U.S.A., 1995

# Sawdust

**ABOUT THIS ISSUE.** I have to admit something. I've always been fascinated with tambours (roll-tops). And it doesn't take much to talk me into building a project with one of these "moving wood" doors.

When we were building the video cabinet for this issue, I thought it was a good opportunity to include a tambour. But this raised a question of practicality. Would anyone really lower the tambour to cover-up the T.V. screen?

After we finished this cabinet, I took it home for a few weeks, and found I couldn't resist closing the tambour every once in a while. It was then I discovered that once the T.V. was out of sight . . . well, I completely forgot about Love Boat and Fantasy Island. (Maybe this tambour is more practical than I thought.)

**PHOTOGRAPHS.** There's something different about the photographs in this issue. We've been experimenting with a new photographic process. In past issues, all of the photographs were printed in a process known as a duo-tone. This is basically a black-and-white photo that's printed in two colors (brown and black in our case).

The photos in this issue are still printed in only two colors (which is why green leaves look brown in the photo on the cover), but we've changed the way the photographs are processed so they have a little more life in them.

We're still in the experimental stages with this new approach, but I think it's kind of exciting. It should improve the quality of the photos so you get a much better picture of what the projects really look like.

**INDEX.** We're including a special 4-page section in this issue: an index to the contents of the first 24 issues of *Woodsmith*, plus a page of sources for mail-order woodworking catalogs.

The index should help locate articles and projects in past issues. We'll up-date it again next year in the January issue.

The list of catalogs includes almost all of the mail-order sources we've used for the projects shown in past issues of *Woodsmith*. This list is by no means a complete accounting of all the catalogs available, but it does include some of the best sources for tools and supplies we know of.

But why do those catalog companies make you pay for what is essentially a book of advertising?

Granted, the catalog companies are "selling" an advertisement. But I think they're worth it. (And I didn't even get paid to say that.) I've learned a great deal from these catalogs — just knowing that a certain tool or a piece of hardware is available is worth a buck or two.

**PUBLISHER'S STATEMENT.** Once each year we're required (by the Post office) to include the Publisher's Statement shown below. Last year, this statement showed a total circulation of about 30,000. Now we're up to 74,000. But that was as of the September issue. With this issue, the total circulation is 110,000, and growing.

This kind of growth has put a few strains on all of us here at *Woodsmith*. And this is one of the reasons we're behind schedule for getting the issues out on time.

**NEXT MAILING.** The next issue of *Woodsmith* (No. 26) will be in the mail during the first week in April. Until then, thanks for your patience.

## STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Required by 39 U.S.C. 3685)

1. Title of Publication: Woodsmith. 1a. Publication No.: 01644114. 2. Date of Filing: September 30, 1982. 3. Frequency of issue: Bimonthly. 3a. No. of issues annually: six (6). 3b. Annual subscription price: $10.00. 4. Complete mailing address of known office of publication: 1912 Grand Avenue, Des Moines, (Polk County), Iowa 50309. 5. Complete mailing address of the headquarters of general business offices of the publisher: 1912 Grand Avenue, Des Moines, Iowa 50309. 6. Complete address of publisher, editor, and managing editor: Publisher: Donald B. Peschke, 1912 Grand Avenue, Des Moines, Iowa 50309, Editor: (same as publisher), Managing Editor (none). 7. Owner: Donald B. Peschke, 1912 Grand Avenue, Des Moines, Iowa 50309. 8. Known bondholders, mortgagees, and other security holders owning 1 percent or more of total amount of bond, mortgages or other securities: None. 9. (does not apply) 10. Extent and nature of circulation:

| | Average no. copies each issue during preceding 12 months | Actual no. copies of single issue published nearest to filing date (Sept., 1982) |
|---|---|---|
| A. Total no. copies printed (net press run) | 54,832 | 80,782 |
| B. Paid Circulation | | |
| 1. Sales through dealers and carriers, street vendors and counter sales | 1,185 | 1,781 |
| 2. Mail subscriptions | 48,938 | 72,531 |
| C. Total paid circulation (Sum of 10B1 nd 10B2) | 50,123 | 74,312 |
| D. Free distribution by mail, carrier or other means samples, complimentary, and other free copies | 21 | 23 |
| E. Total distribution (Sum of C and D) | 50,144 | 74,335 |
| F. Copies not distributed | | |
| 1. Office use, left over, unaccounted, spoiled after printing | 4,624 | 6,424 |
| 2. Returns from news agents | 64 | 23 |
| G. Total (Sum of E, F1 and F2) | 54,832 | 80,782 |

11. I certify that the statements made by me above are correct and complete. (signed) Donald B. Peschke, Publisher/Editor

# Tips & Techniques

### PHYSICS 101

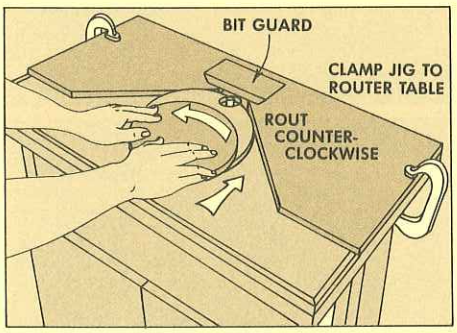
Recently, I experienced considerable difficulty trying to put a sanding sleeve on my drum sander. Then I remembered a trick I learned in my high school physics class.

To reduce the size of the sanding drum so that the sleeve would slip on without difficulty, I put the drum into the freezer for about fifteen minutes. As the drum cools off, it contracts enough so that the sanding sleeve can be slipped on without any problems.

*David N. Bower*
*Laurens, South Carolina*

### ROUTING EDGES ON SMALL CIRCLES

I've come up with a jig to use on the router table that eliminates a lot of the problems associated with routing the edges of round blanks. First of all, it makes routing small round blanks a whole lot safer than trying to rout them free hand. Second, you can rout the edges of round blanks using bits




that have no pilot bearings (since the jig itself limits the width of cut the bit makes).

And finally, when it comes time to rout the edge on the finish side of a round blank, I can do it accurately without having to mar the face of the blank with a trammel point (which requires drilling a hole on the face sides of a blank for the trammel point to ride in.)

To make the jig, I used a piece of ¾" plywood approximately 12" x 30". Then I made two cuts for the opening as shown in the diagram. (I tried to keep the two sides of the "V" at a 45° angle from the front side of the jig). Then where the two sides of the "V" meet, I cut a 3" square opening for clearance around the router bit.

Next, I attached a hinged bit guard to the back side of the 3" square opening. This way, the guard can be flipped up out of the way when not in use.

To use the jig, I've found the key thing to watch for is that the round blanks are cut out as cleanly as possible. And the best method I've found to do this is to use the router and a trammel point on the *back* side of the blank.

Then I position the jig on the router table so that the bit is only taking a light cut when the blank is held against the sides of the "V". After the jig is clamped in position, the blanks are routed in a counter-clockwise direction, keeping pressure against both sides of the jig, and against the surface of the table.

*Brian Smith*
*Keyser, West Virginia*

### AN INEXPENSIVE DRILLING JIG

I use a piece of Masonite peg board as a marking gauge to drill evenly spaced holes in cabinet sides, etc. The advantage of peg board is that you can cut it to the size of the piece being drilled, and then just hold it against the side of the cabinet. It's easy to keep everything flush and square, and the holes are evenly spaced every time.

*Ralph Scott*
*Woodland, California*

### CARRIAGE BOLTS

I've found that whenever I'm using carriage bolts in wood, the square shoulder (that's supposed to hold the bolt securely) has a tendency to slip when I'm trying to remove a nut on the other end.

What I've done to counter this effect is to cut a slot into the end of the bolt with a hack saw. Then as I'm removing the bolt, I can insert a screw driver in the end of the bolt to keep it from turning.

This has been particularly helpful when working with woods that have deteriorated from age, or when the nuts on carriage bolts have to be removed frequently.

*Paul Ingmanson*
*Marseilles, Illinois*

### IT TAKES THREE TO GET ONE

In *Woodsmith* No. 23, you described a technique to flatten the bottom of a hand plane using two surfaces. To be honest, you must have gotten lucky because the only way to get a truely flat surface is by using three surfaces, not two.

Start by marking the surfaces 1, 2, and 3. Then rub surfaces 1 and 2 together (using the silicon carbide slurry as an abrasive) until they show good contact all over. Then rub surfaces 2 and 3 together, and finally surfaces 3 and 1. By using finer and finer grades of silicon carbide slurries, you can get any degree of polish you want.

This method doesn't take any fancy holding fixtures, but it does take a little time and patience. The end result is three absolutely flat surfaces.

*S. W. Hathaway*
*Sudbury, Massachusetts*

### ARTIST'S TRIANGLES

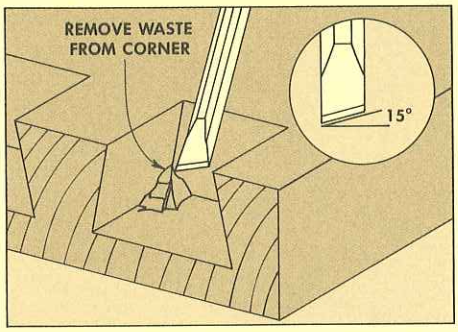
I have a suggestion for quick and accurate setting of the miter gauge on the table saw. For common angles (30°, 45°, 60°, 90°), I use good 12"-14" drafting triangles (available at art supply stores) to set the miter gauge. They're extremely accurate, and you get the same angle every time.

*Bruce Waldvogel*
*Manteno, Illinois*

### DOVETAIL CHISELS

I'd like to make a suggestion to the readers of *Woodsmith* that I find to be very helpful when hand-cutting lap dovetails.

I've found that the hardest part in cutting lap dovetails is cleaning out the waste




in the corners between the pins. What I've done to eliminate this aggravation is purchase two inexpensive ¼" chisels and regrind them at a skew (one has a 15° right-handed skew, and the other has a 15° left-handed skew).

The long point of the skewed chisels really helps to get into the tight corners between the pins when it comes time to clean everything up.

*John R. Mountjoy*
*Winston-Salem, North Carolina*

### SEND IN YOUR IDEAS

If you'd like to share a woodworking tip with other readers of *Woodsmith*, send your idea to: *Woodsmith*, Tips & Techniques, 2200 Grand Ave., Des Moines, Iowa 50312.

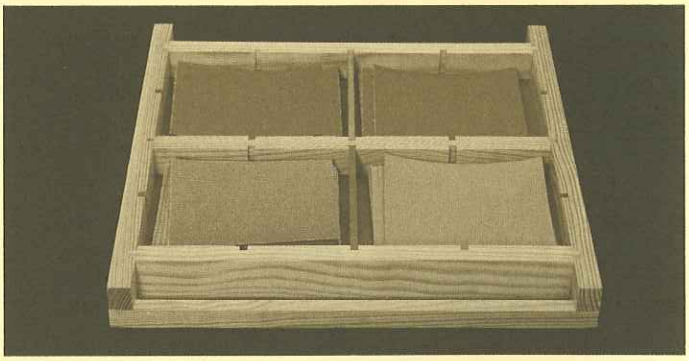
We pay a minimum of $10 for tips, and $15 or more for special techniques (that are accepted for publication). Please give a complete explanation of your idea. If a sketch is needed, send it along; we'll draw a new one.

# Shop Storage Cabinet

## A PLACE FOR EVERYTHING









"Where am I going to put all this stuff? I've run out of baby-food jars and little plastic drawers; and I need a place to put all these screws, brads, sandpaper, bolts, nuts, and a dozen little tools.

"How about a cabinet? Something about the size of a three-drawer file cabinet that doesn't take up much floor space. That should work. And it should have a lot of shallow drawers . . . and the drawers should have 'modular' dividers that can be arranged any way I want them."

I had these thoughts one Saturday as I was going through my monthly "clean everything in the shop" routine. I was getting frustrated with little plastic drawers that don't hold enough, and big workbench drawers that force you to pile tools on top of tools.

I finally decided to build this Shop Storage Cabinet. It takes up less than 2 square feet of floor space, yet there's almost 13 square feet of storage area.

### THE DRAWERS

The cabinet shown here has 12 drawers: six small, five medium, and one large drawer. However, the size and number of the drawers can be altered to suit your needs. A medium-size drawer takes up exactly twice the space of two small drawers. And a large drawer is a little wider than one medium plus one small drawer. (If I were building another cabinet, I'd alter the measurements on the plans to replace the large drawer with three small drawers. These small drawers are really handy for all sorts of things.)

In addition to being multiples of each other, the dimensions of these drawers allow you to cut all the pieces from standard construction lumber (1x4's and 1x6's) with very little waste (see Cutting Diagram on page 7).

One last thing, these drawers are designed to take full advantage of multiple-cutting techniques. Once you make a setting for one drawer, it's the same on all drawers (no matter what size they are).

### THE CABINET

In normal construction procedures, you would decide on the size of the cabinet first and then build the drawers to fit the cabinet. But since there are so many drawers, I wanted to simplify the drawer construction as much as possible.

The best approach, I decided, would be to determine the final dimensions of the drawers (so they would be easy to cut), and then build the cabinet to accept these drawers.

After a little experimenting I found it works best if the outside dimensions of the drawers are 15¼" wide by 15¼" deep. This gave me the dimensions I needed for the cabinet.

**TOP AND BOTTOM.** First cut two pieces for the top and bottom of the cabinet 15¼" wide (this is the depth of drawers). The length of these pieces if 16⅞" (this allows 15¼" for the width of the drawer, plus ⅛" for clearance on the sides, plus 1½" for the rabbets used to attach the cabinet sides.)

Then cut ½" x ¾" rabbets on the ends of the both pieces, see Fig. 2. Also cut a ¼" x ½" rabbet on the back edge (to attach the cabinet's back).

**THE SIDES.** The sides have a lot of grooves for the drawer runners (see Fig. 1), and I wanted to make sure these grooves lined up perfectly on both sides.

To do this, I cut a piece of plywood to the *final length* of the sides, but *twice* the *width* (plus a little extra for trim). This way I could cut all the grooves at the same time in this one double-wide workpiece. Then I ripped the workpiece to get two sides with perfectly matched grooves.

To start, I cut the workpiece to a rough width of 32" and to the final length of the side pieces (34½"), see Fig. 1. This length measurement allows for the amount of space required for the 12 drawers (including clearance), plus 1" for the two ½"-deep rabbets on the top and bottom pieces.

**GROOVES FOR RUNNERS.** Now the grooves for the runners can be cut ½" wide by ¼" deep. I cut these grooves on a table saw with a dado blade. The measurements for these cuts (shown in Fig. 1) are the distance from the fence to the "beginning" edge of the groove.

I'm using the term "beginning" edge because the six grooves at the top of the cabinet are cut with the *top* edge of the workpiece against the fence. But the lower five grooves are cut with the *bottom* edge of the workpiece against the fence. Note: There's no need for a groove (or a runner) for the bottom drawer.

**RIP TO WIDTH.** After the grooves are cut in the double-wide workpiece, rip the two sides to final width to match the top and bottom. Then cut a rabbet on the back edge of both pieces for the cabinet's back.

**ASSEMBLY.** Before the top, bottom and sides are assembled, I cut the ¼" Masonite back to final size. Then glue and nail the four pieces for the cabinet together, and also glue and nail the back in place. (The back will help hold the assembly square).

Finally, I added edging strips to the front on the cabinet (to cover the exposed plywood edges), see Fig. 3.

FIGURE 1

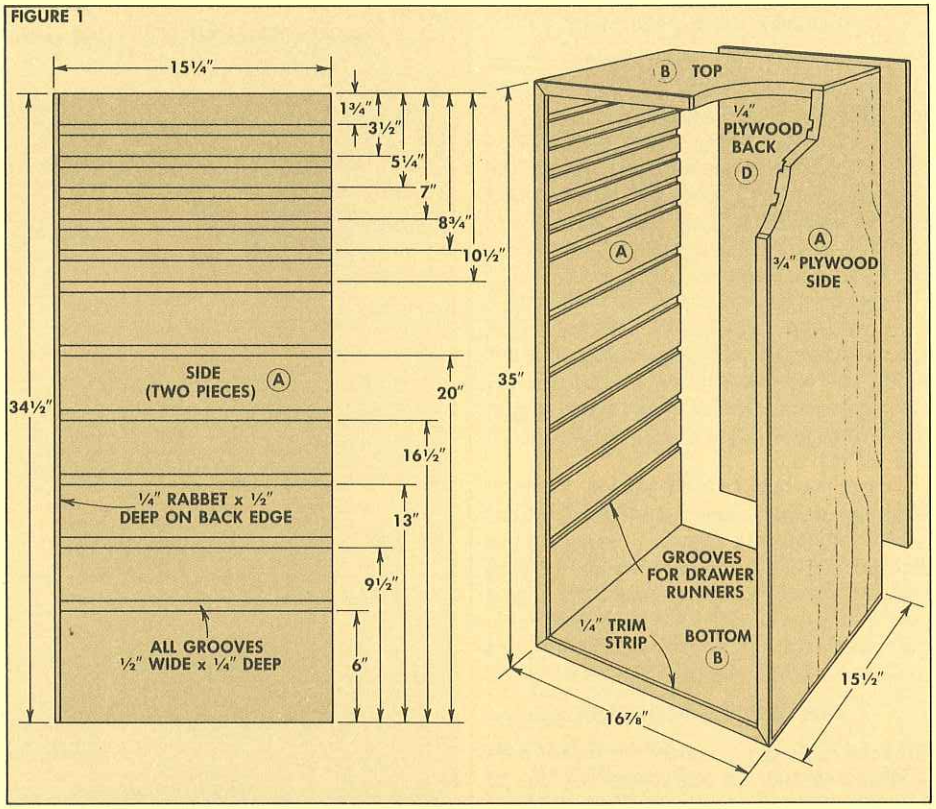



FIGURE 2

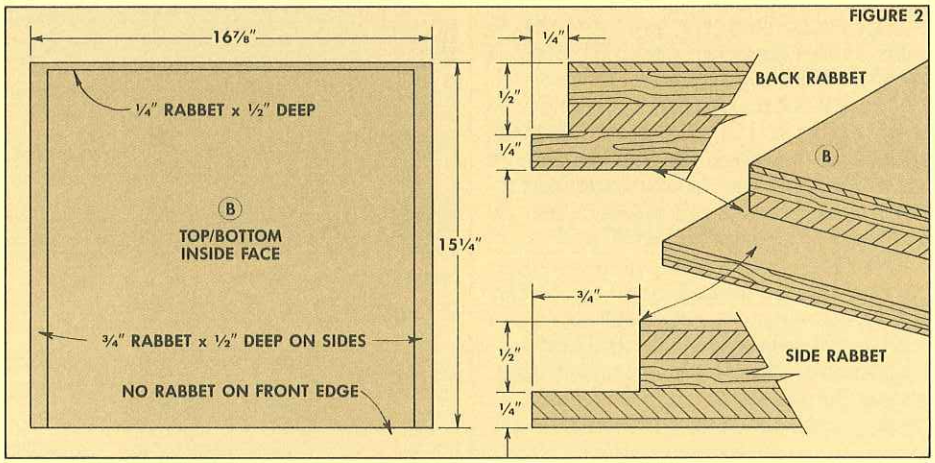



FIGURE 3

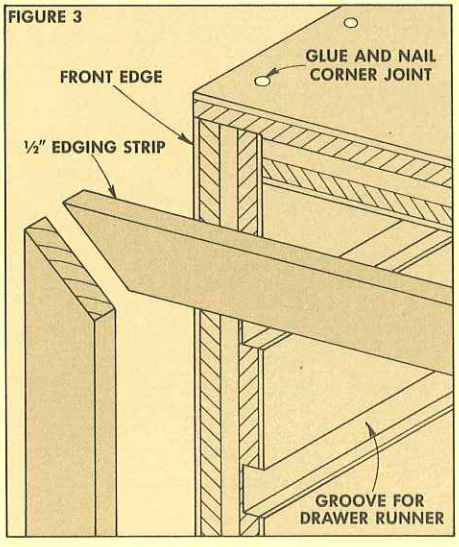
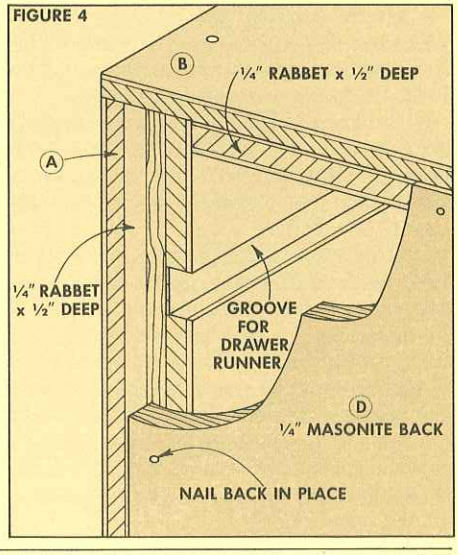



FIGURE 4



## DRAWER CONSTRUCTION

The construction method I used for these drawers is a little out of the ordinary, and probably needs and explanation.

The strangest thing about these drawers is that the sides extend beyond the drawer's front and back. This was done for two reasons. First, I needed a little extra "meat" at the front and back to strengthen the tongue and groove joint.

The other reason has to do with what I didn't want to happen. I didn't want to put a stop on the drawer (so I could pull it out easily and take it wherever I needed it), but at the same time, I didn't want to pull the drawer out too far and have it fall down and hit my toe.

To get the best of both worlds, I simply lengthened the drawer sides so they extended beyond the drawer's back. As the drawer is pulled out, you naturally stop when you see the drawer back. But if you pull a little too far on these drawers, there's still enough left on the drawer sides so they don't fall out of the cabinet.

## THE CUTTING SEQUENCE

Now the fun begins. I spent the better part of a day cutting all the pieces for the 12 drawers. To speed things along, I made multiple cuts: Once the saw is set up to make a cut, I made this cut on all pieces. I used the following sequence of cuts.

1. **CUT TO ROUGH LENGTH.** I find things go much easier if I'm working with small pieces. So I started by cutting enough pieces for the sides, fronts, backs and dividers (plus a few extra pieces to use for test cuts) to a rough length of 15⅞".

This rough length easily accommodates the final lengths needed for all the pieces, and also allows you to get six full cuts out of an 8' board (allowing ⅛" for the kerf).

2. **TRIM TO LENGTH.** Next, I used a panel cutting jig (shown on page 13) to trim all these pieces to their final length, see Fig. 5.

3. **RIP TO WIDTH.** All of these rough pieces are ripped to final width to get the four basic pieces for each drawer (the front, the back, and the two sides).

Note: The dividers (which are optional) are a total of 9/16" narrower than the four basic pieces to allow ½" for the drawer bottom and 1/16" clearance below the top edge of the drawer sides.

4. **SELECTION.** When the pieces are cut to final width and length, mark what each piece is (to avoid confusion), and also mark the inside face of each piece.

5. **DADOES.** Now, a whole bunch of ¼" x ¼" dadoes must be cut in all these pieces. The position of these dadoes is such that you can set the distance from the fence to the inside of the dado blade, and make a cut on one end, then turn the piece around and cut the other end.

FIGURE 5

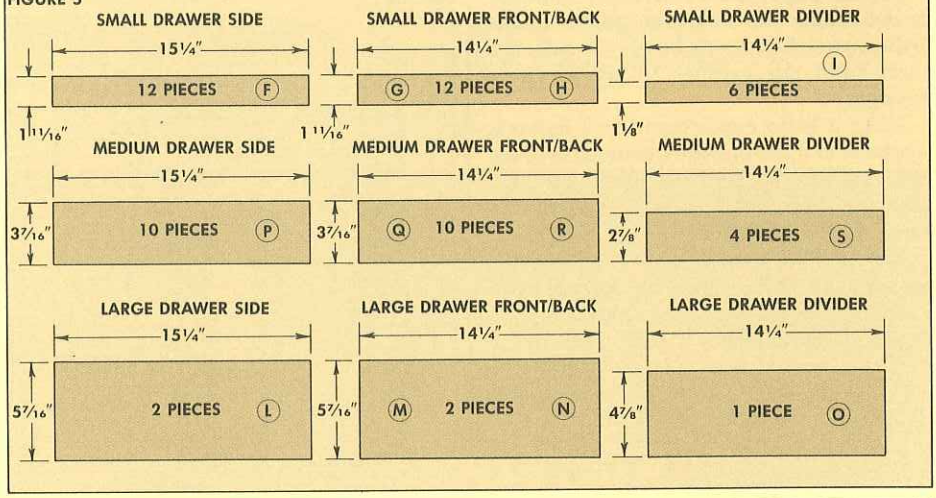



FIGURE 6

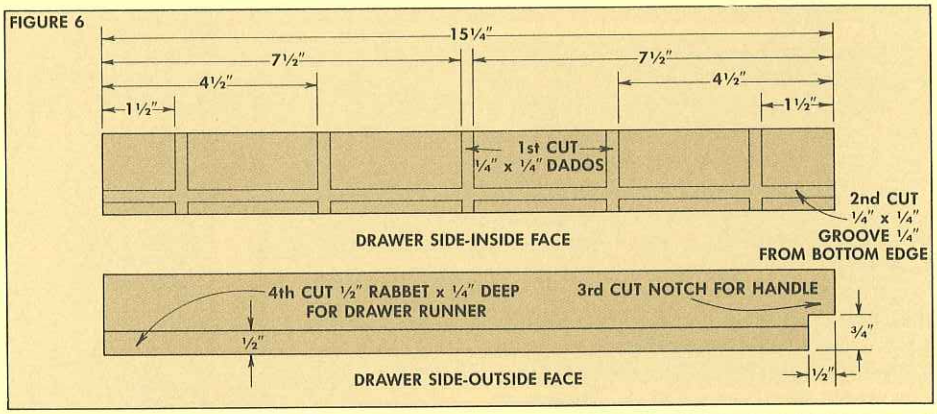



FIGURE 7

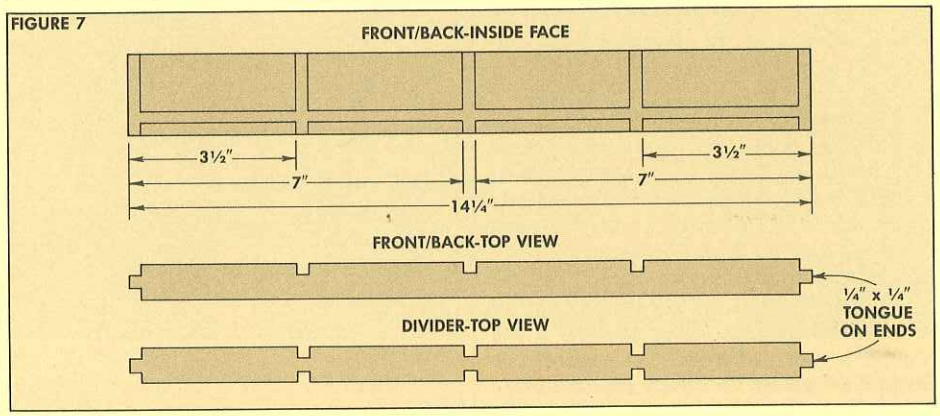
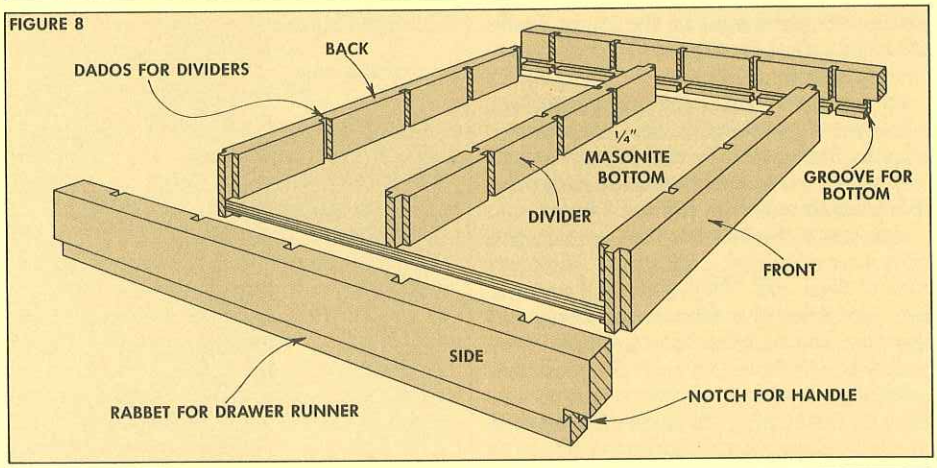



FIGURE 8



I worked on all the side pieces first, see Fig. 6. The dadoes on the front and back pieces and the dividers are all the same (see Fig. 7), except the dividers are cut on both sides.

**6. TONGUES.** After the dadoes were cut, I cut the tongues on the ends of the front and back pieces to fit snugly in the dadoes. (This is just a matter of cutting two rabbets on each end to leave a tongue.) Then reset the saw to cut tongues on the dividers so they fit somewhat loosely in the dadoes. (You want to be able to remove these dividers easily.)

It's best to make test cuts for these tongues on a piece of scrap first. Then join this test piece between two sides to check the final width. (This test assembly should fit between the sides of the cabinet with about ⅛" of clearance.)

**7. GROOVE FOR BOTTOM.** Cut a groove for the drawer bottom on the inside edge of all the fronts, backs and sides. This groove starts ¼" from the bottom edge and is wide enough to accept a ¼" Masonite bottom.

**8. RABBET FOR RUNNER.** Next, rabbets are cut on the outside, bottom edges of the sides to fit the drawer runners. To get a smooth cut here, I cut these rabbets on the router table with a straight bit.

**9. NOTCH FOR HANDLES.** The final step is to match up pairs of drawer sides and mark the front edges. Then cut a ½"-deep by ¾"-high notch on the front edge of each side piece for the drawer's handle.

**10. DRAWER BOTTOMS.** Dry-assemble the four pieces for the drawer to get the measurements for the drawer bottom. (I cut all the bottoms out of ¼" Masonite.)

**11. ASSEMBLY.** Finally, the drawers can be assembled. Apply glue to the tongue and groove joints and join the four pieces and the drawer bottom. (I tacked a small brad through the drawer side to hold each joint together while the glue dried.)

**12. DRAWER HANDLES.** The drawer handles are ripped ½" wide from some of the remaining stock. Then they're glued and nailed into the notch on the front edge of the drawer's sides, see Fig. 9.

**13. RUNNERS.** If all has gone well, the drawers will fit in the cabinet with a total of ⅛" of play. All you need now are the runners. I ripped ½"-wide strips from some of the remaining stock. Then I resawed each strip so there would be about 1/16" clearance between the runner and the rabbet on the drawer side, see Fig. 11.

**14. DIVIDERS.** Use the remaining Masonite to cut dividers for the drawers. (Some of the options are shown in the detail photos on page 4.) Since these dividers are not glued into the dadoes, they may have a tendency to raise up. I cut them about 1/16" less than the height of the drawer sides).

**15. CASTERS.** I added four swivel casters to the bottom of this cabinet so I could move it where I needed it.

FIGURE 9

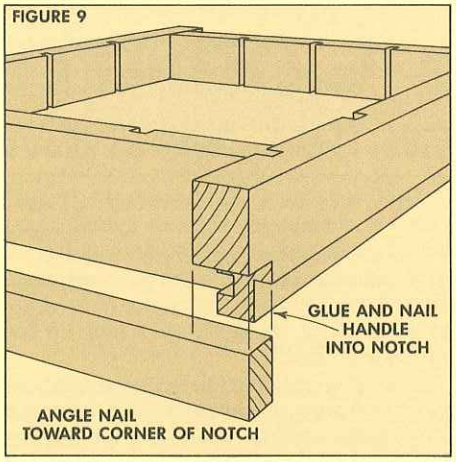



FIGURE 10

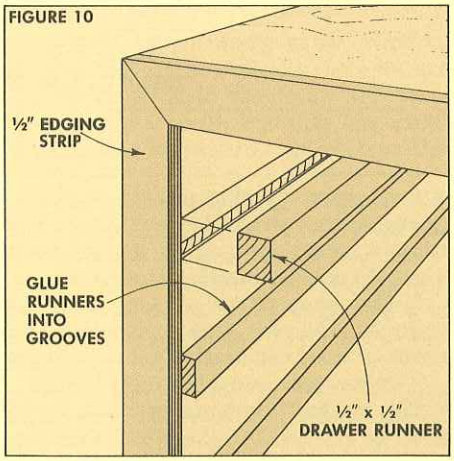
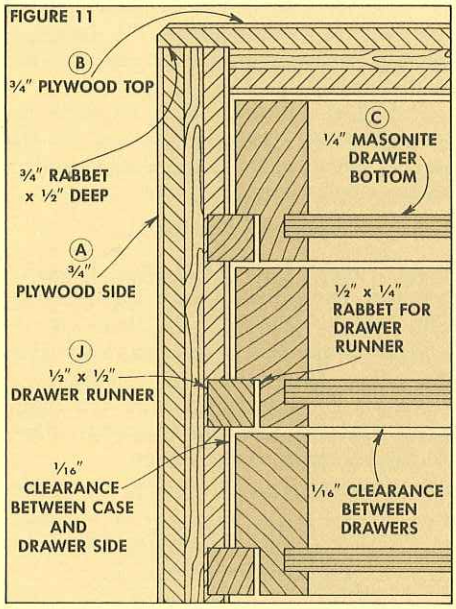



FIGURE 11

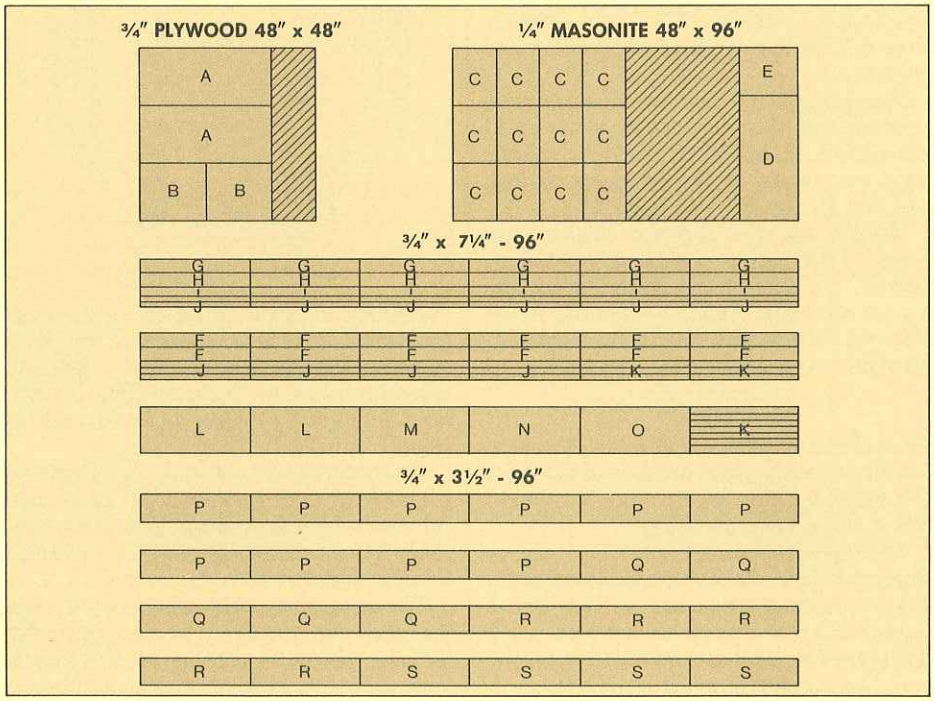



## MATERIALS LIST

**Overall Dimensions: 35"H x 16⅞"W - 15½"D**

| | | |
|---|---|---|
| A | Plywood Sides (2) | ¾ x 15½ - 34½ |
| B | Plywood Top/Bot (2) | ¾ x 15¼ - 16⅞ |
| C | Masonite Drawer Bot (12) | ¼ x 14¼ - 11¾ |
| D | Masonite Case Back (1) | ¼ x 34½ - 16⅜ |
| E | Masonite Dividers | cut to fit |
| F | Small Sides (12) | ¾ x 1 11/16 - 15¼ |
| G | Small Fronts (6) | ¾ x 1 11/16 - 14¼ |
| H | Small Backs (6) | ¾ x 1 11/16 - 14¼ |
| I | Small Dividers (6) | ¾ x 1⅛ - 14¼ |
| J | Runners (24) | ½ x ½ - 15 |
| K | Handles (12) | ¾ x ½ - 15¼ |
| L | Large Sides (2) | ¾ x 5 7/16 - 15¼ |
| M | Large Front (1) | ¾ x 5 7/16 - 14¼ |
| N | Large Back (1) | ¾ x 5 7/16 - 14¼ |
| O | Large Divider (1) | ¾ x 4⅞ - 14¼ |
| P | Medium Sides (10) | ¾ x 3 7/16 - 15¼ |
| Q | Medium Fronts (5) | ¾ x 3 7/16 - 14¼ |
| R | Medium Backs (5) | ¾ x 3 7/16 - 14¼ |
| S | Medium Dividers (4) | ¾ x 2⅞ - 14¼ |

## CUTTING DIAGRAM



# Stave Construction

## JOINERY THAT TURNS INVISIBLE

Almost every turning project begins by gluing up enough wood to work with. This usually means laminating several small pieces to get one big chunk of wood.

If the shape you're working with is a cylinder, the size (and weight) of that chunk of wood can quickly get out of hand . . . unless you use stave construction.

This method of laminating is just a variation on a mitered frame. The only difference is that the miters (or bevels in this case) are cut on the sides of each board, rather than on the ends.

Then these boards are glued together to form a six, eight, ten or twelve-sided "cylinder." It's just like building a barrel (or a hot tub, for those of you under 40).

The result of this method of lamination is a woodturner's dream come true. Stave construction eliminates the nagging problem of end grain on the perimeter of the cylinder.

The biggest advantage, however, is cost savings. Stave construction uses very little lumber because the whole point is to create an almost round surface to begin with. This, of course, also speeds up the turning process.

### CHOOSING THE WOOD

The first step in stave construction is to choose the lumber. From a visual standpoint, certain types of wood work better for this type of assembly. In fact, if the right type of wood is used, the joint lines are almost invisible. (Thus, the cylinder doesn't look like a bunch of scraps glued together.)

The best woods are the open-grained species: oak, ash, butternut, walnut and mahogany. (I used butternut for on the canisters shown in the following article, and koa for the bowl on page 24.)

There's one other factor in choosing the wood. If the lumber is warped, twisted, or bowed, it's almost impossible to cut the staves correctly. And the joints will never be tight. The solution is to use only flat, straight (expensive) wood.

### THE NUMBER OF SIDES

Once the wood has been selected, the next hurdle is deciding the number of sides for the cylinder. This sounds simple enough, but it takes some planning.

The ultimate goal is to turn a cylinder (a true circle) out of a bevel-ripped assembly. Which means a circle has to fit within a cross-section of the assembled pieces . . . and there has to be enough width to get the wall thickness needed for a cylinder.

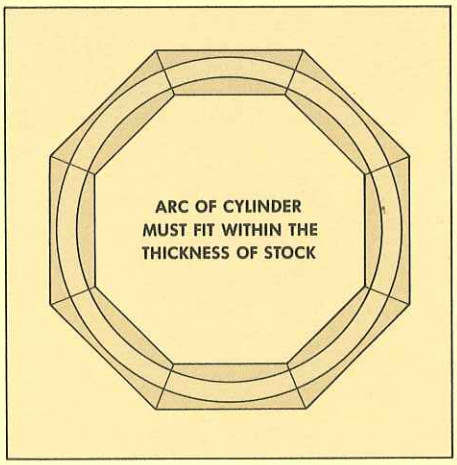
The best way to determine the "right" number of sides for the size cylinder you want is to draw it out on paper first. For all four canisters shown in the next article, I knew I wanted a wall thickness of ⅜", plus at least ⅛" for waste (when truing up the cylinder walls).

Since the largest canister presented the most problems, I started with it. I drew a circle with a radius of 3⅜" (for a diameter of 6¾"), see Fig. 1. Then I drew another one inside it with a radius of 2⅞" (which is enough for the ⅜" wall thickness, plus the ⅛" for waste).

It turned out that using 4/4 stock for an eight-sided assembly worked for the largest canister, and it also worked well on all the smaller sized canisters.

### CUTTING THE BEVELS

Once I decided on eight sides, I had to bevel-rip the sides to make the cylinder. The angle of the blade for these cuts is critical — even a slight error can lead to big headaches. In the case of an eight-sided assembly for example, there are eight joints. But each joint consists of two sides. So, there are 16 cuts involved.




Any error in the angle of the bevel is multiplied by 16 — a ¼° error in the bevel setting adds up to a 4° error when the assembly is glued together. That's more than enough to create some unsightly gaps.

**SOLUTION.** The best way I've found to get around this problem is to make two sub-assemblies for the cylinder. Each sub-assembly consists of one-half the total number of sides.

The advantage of two half-cylinders is that they can be sanded to mate perfectly (which we'll get to later). (This also means the cylinder must have an even number of sides so it can be divided into halves.)

Although some corrections can be made on these sub-assemblies, it's rather important to get as close as possible when cutting the bevels. (For eight-sided assembly the blade angle is set to 22½°.)

**SETTING THE SAW BLADE.** The most accurate method I've found to set the bevel of the blade is to use an adjustable triangle. (Adjustable triangles that can be set to any degree between 0° and 90°. See *Woodsmith* No. 20 for more on these triangles.)

Set the angle on the adjustable triangle and hold it against the body of the blade (so it doesn't touch any of the teeth). To check this setting, go ahead and cut a piece of scrap wood, and then check the bevel of the actual cut. (The best way to do this, is to duplicate the angle on a sliding bevel gauge.)

If the angle is off, adjust the blade and make another test cut until you get as close as possible. (Slight errors can be compensated for later.)

### CUTTING THE STRIPS

Once the bevel is set, I cut eight strips to the widths needed for all of the cylinders. (See page 10 for the widths of each stave for the four different size canisters.) Just to be on the safe side, I cut one extra stave per cylinder.

After all of the staves are bevel-ripped to width, cut them to length. (To compensate for some loss during the turning process, cut the staves about 2" longer than their finished lengths.)

**LAYOUT AND MARKING THE STAVES.** When the staves have been cut, lay the eight staves side by side and arrange them to get a nice grain pattern. Then to keep everything in order, number all of the staves to maintain their sequence during the gluing process.

### ASSEMBLING THE CYLINDER

It's possible at this point to glue all eight staves together at once to form a cylinder. But whenever I try this, I wind up with frayed nerves and an expanded vocabulary. Instead, I glue the staves into sets of two, then into sets of four, and finally into the completed cylinder. The first two steps of this gluing procedure are done with hand pressure only.

Hand pressure only? Does that really work without using clamps?

It's surprising what you can do with a little pressure and the right glue. I use Titebond glue, which is a fast-setting glue that makes it possible to "clamp" the

staves together with just hand pressure.

Spread some glue on one surface of the joint. Then slide the beveled edges together and hold them firmly for about one minute, see Fig. 1. As you slide the two staves together, try to keep the outside corners of the bevels tightly together. Also try to keep the bottom edges flush.

Once all of the staves have been joined into sets of two, join these sets together to form sets of four, using exactly the same procedure.

### CORRECTIVE MEASURES

These sets of four form the half-assemblies mentioned earlier. Any error in the bevels can be corrected at this point before the half-assemblies are joined together.

But first, the angle of the bevels must be checked with a straight edge, see Fig. 2. If the bevels are at the correct angle, the straight edge will touch the entire width of both beveled edges.

But that's not usually the case. Most of the time (at least in my shop) the straight edge only touches the inside or outside corners of the bevels. And, they have to be corrected. Fortunately, this is a relatively easy operation.

To correct the angle of the bevels, fasten a piece of sandpaper to a flat surface (a table saw, or a piece of plate glass). Then sand both half-assemblies until the beveled edges are flush with the flat surface, see Fig. 3. (As you sand, rotate each assembly to prevent rounding over of the ends.)

Sanding the beveled edges like this produces two flat surfaces that can be easily joined. However, it also changes the angles of the bevels just slightly, and alters the final proportions of the assembly. This is usually not a problem, but you want to remove as little material as possible to keep the assembly close to the original shape.

Once the two halves match, glue them together using two band clamps, keeping the bottom edges flush, see Fig. 4.

### MOUNT FOR TURNING

Now this stave assembly is ready for turning. In order to turn it into a true cylinder it must be mounted to a plywood disc, which in turn is mounted to the faceplate of the lathe.

**CENTERING THE CYLINDER.** The trick is to mount the cylinder so it's exactly centered on the plywood disc, and so the disc is exactly centered on the faceplate. All of this centering is critical because there simply isn't enough material to allow removal of very much stock when the cylinder is trued on the lathe.

To make the plywood disc, draw a circle about 1" larger than the diameter of the cylinder. (I used a compass to draw this circle so I would know where the center point is.) Cut out the disc and then draw another circle to a diameter that matches the cylinder's widest (point-to-point) width, see Fig. 5. This circle is used to center the outside of the cylinder as it's being glued to the plywood disc.

However, before gluing on the cylinder, you should drill pilot holes in the plywood disc to mount it to the faceplate. Once again, draw a circle that has the same radius as the outside row of holes on the faceplate.

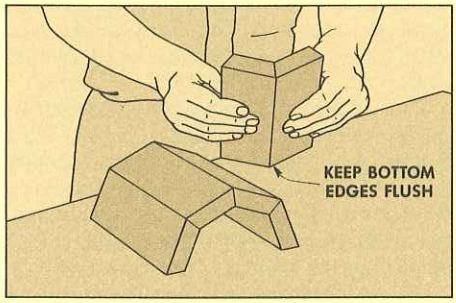
Lay the faceplate on the plywood disc, centering the outside row of holes over the line and mark the location of all the screw holes. Then drill pilot holes completely through the plywood. (The faceplate is actually attached to the other side of the disc.)

Finally, the cylinder can be mounted to the plywood disc. Sand the bottom edge of the beveled assembly as smooth as possible to get good contact. (I used the same technique shown in Figure 2, except the end of the assembly is on the sandpaper.)

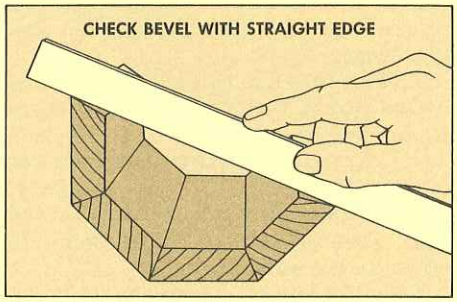
When the bottom edge is smooth, apply a liberal coat of Titebond glue to the bottom edge of the cylinder. Then position the cylinder on the plywood disc so all of its corners touch the drawn circle.

To clamp the cylinder to the disc, put a piece of plywood on top of the cylinder and place this whole assembly on a drill press table. As pressure is applied with the drill press, be sure that the cylinder doesn't slide around. (Let the cylinder sit on the plywood for just a minute or two before clamping to help eliminate some of the tendency to slide.)

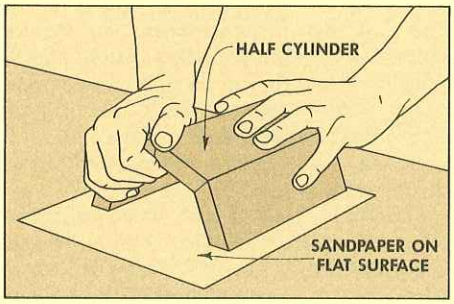
Allow the glue to set overnight. Then the cylinder is ready to turn.



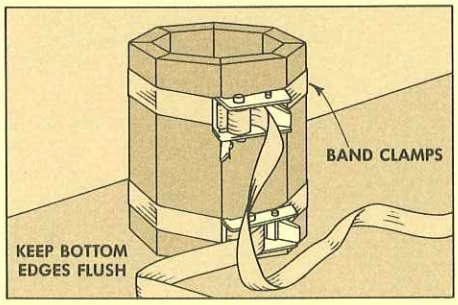

**1** *Glue the staves into sets of two, then into sets of four. Hold them with hand pressure only for about one minute. Be sure all of the bottom edges are flush.*



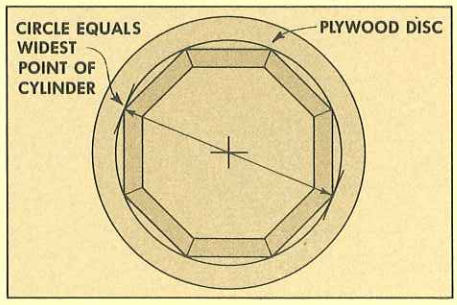

**2** *When the glue is dry on the half-assemblies, the beveled edges should form a straight line. If they don't, it can be corrected before final assembly.*



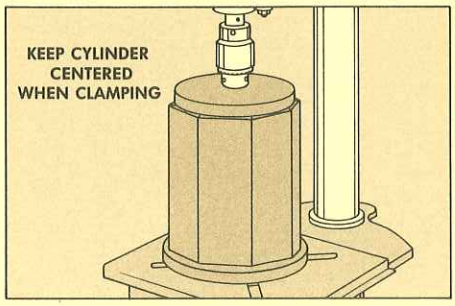

**3** *To correct any error in the bevels, sand the assemblies on a flat surface. Occasionally rotate the assembly end for end to prevent rounding over the edges.*




**4** *When the bevels on the two halves meet to form a tight joint, apply glue and band-clamp the entire assembly overnight. Be sure the bottom edges are flush.*




**5** *To mount the cylinder on the lathe, prepare a plywood disc by drawing a circle equal to the maximum diameter of the cylinder. Center cylinder on this line.*




**6** *Clamp the cylinder to the plywood disc using a drill press or heavy weight. Be sure cylinder doesn't slide out of marked circle as pressure is applied.*

# Turned Canister Set

## FOUR TURNS FOR THE KITCHEN

I just couldn't take it anymore. Every morning as I stumbled to the kitchen for my first cup of coffee, those awful canisters were staring me in the face. You know the ones. Those ceramic things that look like a brown log with a little squirrel handle glued on the side. I finally decided they had to be replaced . . . I had to turn a set of wooden canisters.

For the canisters shown here, I used butternut for the main body, and walnut for the base and lid. And just to make things interesting, I thought this would be a good opportunity to use stave construction to laminate the cylinders. (See the previous article for a detailed description of stave construction.)

Turning a canister (cylinder) that's built using stave construction requires procedures that are different . . . even by a woodturner's standard.

First, the cylinder is partially turned even before the base is attached. Then later, the base is added, and the whole assembly is reversed on the lathe before the turning is finished. A strange procedure, I admit, but it's the best way I've found to get the job done.



### TURNING THE CYLINDER

The first step is to bevel-rip the staves needed for the four canisters. I used eight-sided assemblies for each of these canisters. (This means a bevel setting of 22½°.) But to get the four different sizes, I varied the width of each stave, as shown in the drawing below.

The final length of each stave (which is the height of the cylinder) is equal to the final diameter of the cylinder. I cut each stave about 2" longer than needed to allow a little waste for turning.

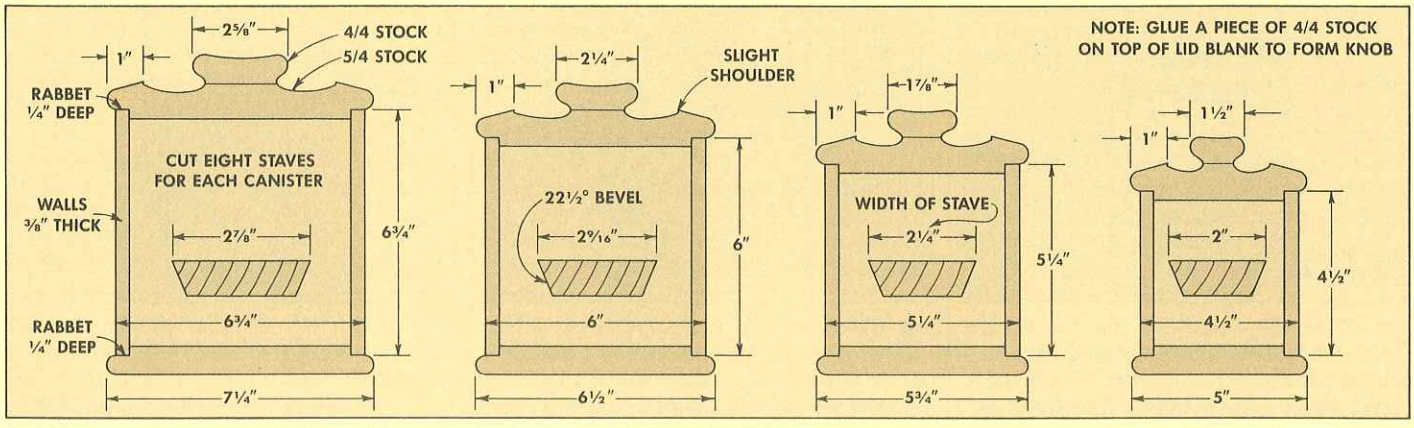
Once the staves are cut, they're assembled to form the rough eight-sided cylinders. Then these cylinders are mounted to plywood discs (as described on the previous page).

**DETERMINE WALL THICKNESS.** The most critical part of turning these canisters is determining the thickness of the walls. I started by turning the largest size canister because it will have the least amount of wall thickness after it's trued-up on the lathe. Then the other three canisters are turned to the same thickness.

Mount the largest cylinder on the lathe. Then the outside walls of the cylinder (and the plywood disc) are turned true using a large gouge, see Fig. 1. Remove only as much material as needed to turn the walls clean and straight. You want to leave as much thickness as possible for the inside walls.

The section of the cylinder right next to the plywood disc is difficult to get to with a gouge, so I switched to a square-nosed scraper here. Then I checked the walls to make sure they were straight. (Use outside calipers to measure the outside diameter along the length of the canister.)

**SMOOTH THE WALLS.** Once the diameter is consistent, the next step is to improve the finish left by the roughing-out gouge. Normally, the tool I'd reach for is a skew. But in this case, there's a problem. The



tool rest on the Sears lathe I was using can't be raised high enough for the skew to cut at the proper angle.

Instead, I cleaned up the walls of the cylinder in a two-step procedure. First, I made a couple of very light passes with a freshly sharpened gouge. (Depending on the wood, a heavy scraper may also help.) Then for the final clean-up, I used an orbital sander, see Fig. 2.

Although a sander is not a typical turning tool, it does a terrific job for the final cleaning on the outside of the cylinder. Set the lathe to the slowest speed and use only the lower half of the sander's pad (to prevent the "leading edge" from grabbing the cylinder).

**TRUE THE RIM.** When the outside is smooth, check for straightness again, and then true the rim of the canister. I used a parting tool for the initial cut on the rim (see Fig. 3). Then to ensure the rim forms a clean joint when the base is attached, I made a second pass with a skew to improve the finish.

**PREPARING FOR THE BASE.** To prepare the cylinder for the base, true the inside walls to a depth of 3" or 4". Here, I used a square-nosed scraper, making only very light passes until the high points were removed, see Fig. 4.

(Shop Note: Normally, a rabbet would be cut in cylinder walls to accept the base. But on these canisters, I cut the rabbet in the base because the walls of the cylinders are too fragile to accept a rabbet.)

After the walls are roughed down to a depth off 3", I turned them to their final thickness, and checked for uniform wall thickness with outside calipers.

Shop Note: By turning the inside walls slightly deeper than needed for mounting the base, I eliminated having to turn this area later. (This will be the bottom of the canister, and difficult to get to.)

Finally, the cylinder is taken off the lathe, and the faceplate is removed so it can be used to turn the canister's base.

## THE CANISTER'S BASE

The base of each of these canisters is turned from 5/4 stock. (I used walnut.) Edge-glue enough stock to cut blanks 1½" larger than the outside diameter of the corresponding cylinder. Then, to avoid screw holes in the bottom of the base (when it's mounted to the faceplate), I mounted these blanks to a plywood disc with the paper-and-glue method.

First, cut a plywood disc 1" larger than the blank. Then pre-drill pilot holes in the disc (to match the holes in the faceplate). Next, cut a piece of paper slightly larger than the plywood disc and glue the paper between the disc and the blank. Let this assembly dry overnight.

Finally, attach the blank assembly to the faceplate. (I used 6" faceplates for the two largest canisters, and 3" faceplates for the two smallest canisters.)

**PREPARING THE BASE.** After the blank is mounted to the faceplate, it's turned true with the lathe, reducing the diameter of the blank to 1" larger than the corresponding cylinder.

Before the base is completed, a rabbet is cut on the rim of the base so the cylinder can be mounted to it. Mark the width of the rabbet so it's 5/16" from the edge nearest the tailstock. Then use a parting tool to cut the rabbet until it's slightly larger than the inside diameter of the cylinder, see Fig. 5.

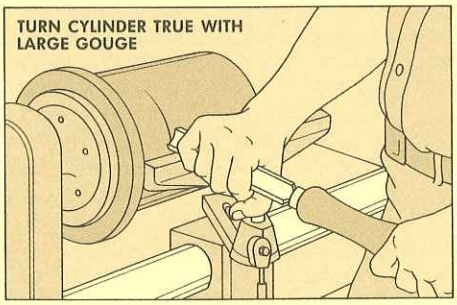
When you start to get close to the final size, use the cylinder itself as a guide to determine the final size of the rabbet. Be sure the rabbet fits quite snugly in the cylinder, or there will be a gap where the cylinder walls meet the base.

Once the rabbet is cut, finish sand the inside face of the base to eliminate having to sand this area when the canister is assembled.

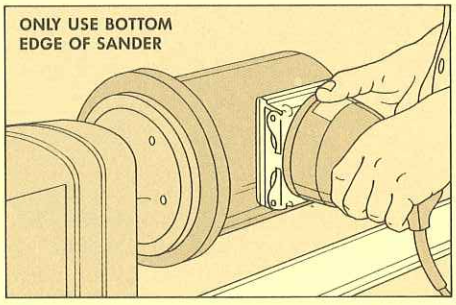
## MOUNT THE CYLINDER

Finally, with the base blank still on the lathe, apply glue to the rabbet and attach the cylinder. (Don't apply too much glue, or it will squeeze out into the inside corner of the canister.)

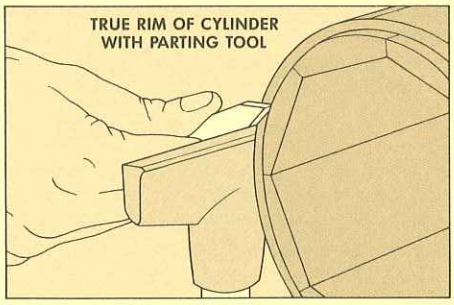
Since the plywood disc is still mounted to the cylinder, I could use the tail stock of the lathe (and a live center) to clamp the cylinder against the base blank, see Fig. 6. As you apply pressure with the tailstock, make sure the edge of the stave assembly and the bottom blank meet securely on all sides of the cylinder. Allow this assembly to dry overnight.



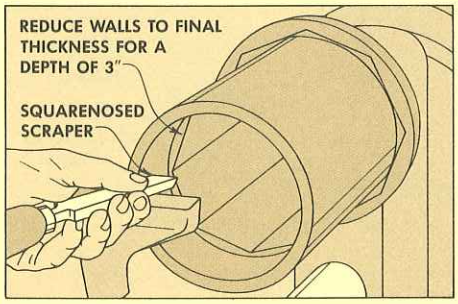

**1** *True the majority of the cylinder (and the disc) with a large gouge. When working near the plywood disc, take light cuts with a square-nosed scraper.*



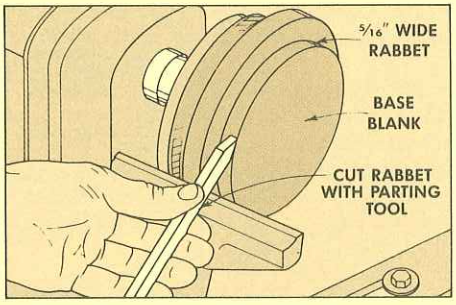

**2** *After the walls of the cylinder are cleaned up, (and checked for straightness), use the bottom edge of an orbital sander to sand the outside walls.*



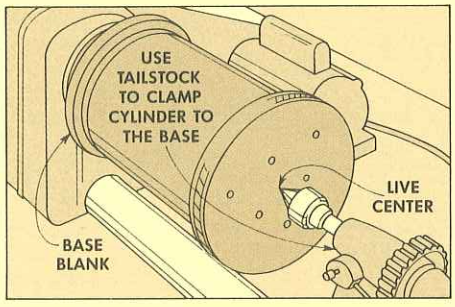

**3** *The rim of the cylinder is trued with a parting tool first. Then it's cleaned up using a skew so it forms a clean, tight joint when the base is attached.*




**4** *After the rim is cleaned up, turn the inside wall to its final thickness with a square-nosed scraper. This area can be turned to a depth of about 3" or 4".*




**5** *Use a parting tool to cut a rabbet on the base so it fits the turned section of the cylinder. Check the size of the rabbet with the cylinder itself.*




**6** *Use the tailstock of the lathe to clamp the cylinder to the base. Be sure the cylinder meets the base to form a tight joint. Let this assembly dry overnight.*

### TURN THE INSIDE WALLS

Before the inside walls can be turned, the plywood disc must be removed from the "top" of the canister. Mark the finished length of the canister on the outside of the cylinder. Then *start* a cut with the parting tool about ¼" to the *outside* of the marked line, see Fig. 7. Make this cut only about ⅛" deep.

Then, turn off the lathe and use a hand saw to finish the cut. After the plywood is removed, trim the cylinder to its finished length with the parting tool, and clean up the rim with a skew.

**TURN INSIDE WALLS.** I trued-up the inside walls with a square-nosed scraper, removing material in very small increments, see Fig. 8. When the inside walls are close to the right thickness, make only light passes to match the wall thickness already turned at the bottom of the canister. Finally, to improve the finish of the walls, I made very light cuts with a round-nosed scraper.

**TURNING THE BEAD.** The main body of the canister is almost done. The next step is to turn the bead on the base of the canister. First, reduce the diameter of the base so it sticks out about 5/16" from the wall of the cylinder. Then use a small gouge to turn the bead so it's ¼" wider than the cylinder, see Fig. 9. (I switched to a square-nosed scraper to finish the right half of the bead that's next to the cylinder wall.)

**REMOVING THE CANISTER.** After the bead is turned, the entire canister can be finish sanded, inside and out. Then the canister is removed from the lathe and the base is separated from the plywood disc by driving a 1" wide chisel right at the paper joint. (This will split the paper washer and separate the two pieces.)

Finally, I sanded off all traces of the paper and glue off the bottom of the canister. I also hollowed out the bottom of the base (with an orbital sander) so it would sit on a flat surface without rocking.

### TURNING THE LIDS

The lids for these canisters are probably the most difficult aspect of this project. The problem is trying to turn four different sized lids to look the same.

To do this, I turned a tapered bead on the rim (see Fig. 10) so it was exactly the same on all four of the lids. Then I simply reduced the size of the knobs (and the hollow around the knobs) on each successively smaller lid.

All of this begins by cutting out four blanks. I used 5/4 stock for the major portion of the lid, and added a small piece of 4/4 stock in the center of the blank for the knob. Then I used the paper glue method again to attach the blanks to a plywood disc and finally to a faceplate.

Turn each lid blank true with the lathe, and reducing the diameter of the lid blank to 9/16" larger than the cylinder.

**RABBET.** When the blank is trued, cut a ¼"-wide rabbet on the bottom of the lid, see Fig. 10. This rabbet should be cut deep enough so the lid fits loosely inside the rim of the canister. When you get close to the right size, remove the entire assembly and test it on the canister.

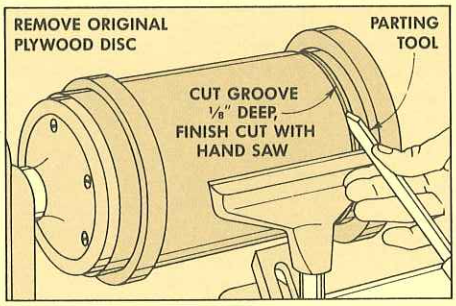
**SHAPING THE RIM.** After the rabbet is turned, mark the apex of the bead on the remaining edge of the blank, see Fig. 11. The apex should be slightly to the left to allow a little extra "meat" on the right side for the tapered shoulder.

I turned the left side of the bead first. Then the oversized right half is turned to match the left side. And finally, I used a round-nosed scraper to form the taper that flows from the bead. This taper ends with a definite shoulder 1" from the outside edge of the bead. (I cut this 1/16"-deep shoulder with a square-nosed scraper.)

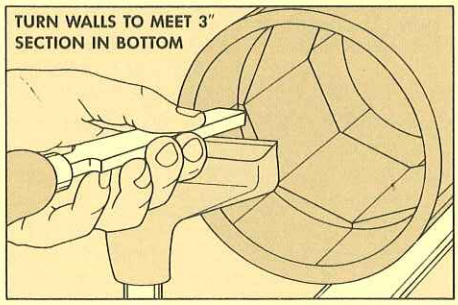
**THE KNOB.** Next, I worked on the knob. Form the neck of the knob with a round-nosed scraper, see Fig. 12. At the same time, form the hollow around the knob so it flows smoothly out to the shoulder of the tapered bead.

Then the edges of the knob are rounded over, and the slight hollow is carved in the top of the knob. Finally, sand the lid, and then separate it from the plywood disc with a chisel.

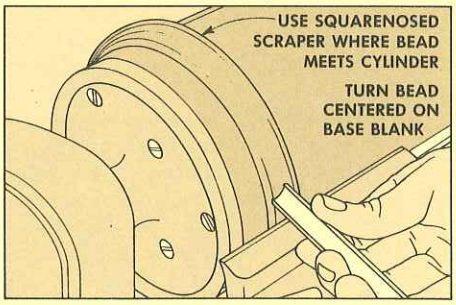
**FINISHING.** I finished the *outside* of the canisters with Hope's Tung Oil Varnish. However, on the inside, I applied three coats of Behlen's Salad Bowl finish (a non-toxic finish that's safe around food.)



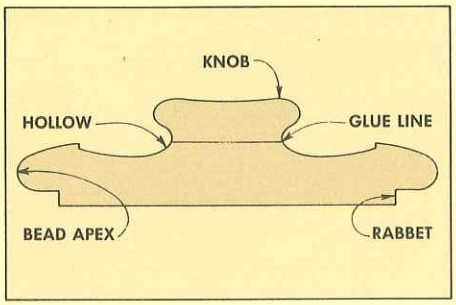

**7** *To remove the plywood disc from the cylinder, make a partial cut with a parting tool. Then turn off the lathe and complete the cut with a hand saw.*



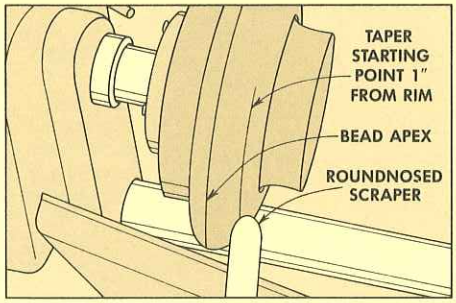

**8** *To finish the inside of the cylinder, turn the wall with a square-nosed scraper until the thickness matches the previously-turned section near the bottom.*



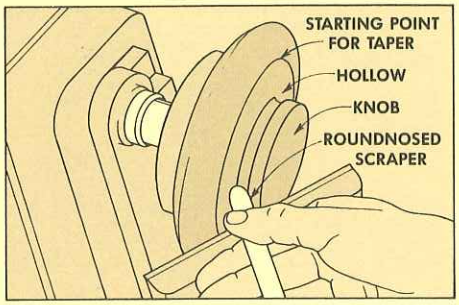

**9** *Use a small gouge to cut a bead on the base so it extends ¼" from the cylinder. Switch to a square-nosed scraper where the bead meets the cylinder.*




**10** *The lid is formed with a tapered bead around the perimeter. This bead is the same size on all lids, but the knob and the hollow get smaller on each smaller lid.*




**11** *To form the lid, first cut a rabbet to fit the cylinder. Then cut a bead on the rim of the lid, and form a 1"-wide taper with a round-nosed scraper.*




**12** *When the outside rim is done, form the neck of the knob and the hollow around the neck with a round-nosed scraper. Then finish turning the knob.*

# Shop Notes

## SOME TIPS FROM OUR SHOP

Table saws can do a lot of things, but sometimes they need a little help. We used two different cutting jigs to make some of the "specialty" cuts needed for the projects in this issue.

### PANEL/CUT-OFF JIG

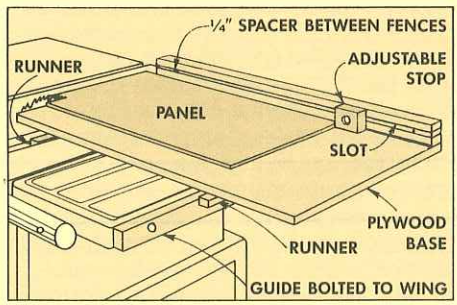
The first jig is one we originally used to cut glued-up panels to size back in *Woodsmith* No. 18. Since then we've been using it for more and more "specialty" cuts.

**CUTTING LONG PANELS.** For instance, the plywood top of the Coffee Table in this issue had to be cut to a length of 44½". This is a difficult cut to make because the rip fence (on most saws) can't go beyond 24", and a miter gauge is too small to give adequate support for a workpiece this large. Instead, I used the panel-cutting jig as a giant miter gauge to support the plywood while cross-cutting it to length.

**CUT-OFF JIG.** This same jig served another role when I cut the legs for the Coffee Table and the pieces for the drawers of the Shop Storage Cabinet. In both cases, I wanted to cut several pieces to identical length. And I was able to use the panel-cutting jig as a cut-off jig by adding a moveable stop block.

**CONSTRUCTION.** The basic jig is very easy to make. Cut a piece of ½" plywood for the base about 16" wide and long enough to extend 12" past the wing of the table saw.

The base is guided with two runners. The first runner is cut to fit the miter gauge channel. The second runner is mounted to the outside edge of the plywood base so it rides against the edge of the extension wing. (Some extension wings have bolts along the edges, so you may wat to add a wooden strip to the edge of the wing.)



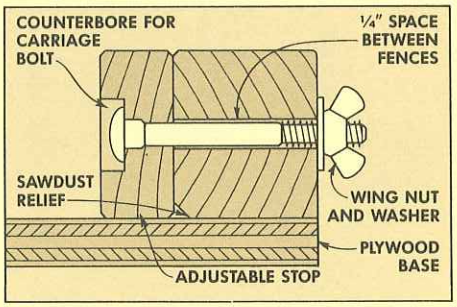

**ASSEMBLY.** To assemble the jig, place the first runner in the miter gauge channel and spread a thin bead of glue along the top of it. Then position the plywood base over the runner so the "working" end of the plywood extends into the path of the blade.

Temporarily tack the plywood to the runner with small brads. Then pick up the base and turn it over to drill pilot holes and drive screws to secure the runner to the base. Return this assembly to the saw and mount the outside runner so it fits snugly against the wooden strip on the end of the extension wing.

Now trim the working end of the base square by pushing it through the saw blade. (This way you know the end of the base is exactly on the path of the blade.)

**THE FENCE.** Finally, add the fence to the trailing edge of the base. Chamfer the inside edge of this fence to create a sawdust relief. Then use a large framing square to position the fence square with the working edge (and the blade), and glue and nail it in place.

Up to this point the jig is the same as the one shown in *Woodsmith* No. 18. But recently I added a moveable stop to the fence. This is simply a matter of cutting another strip the same width as the fence.



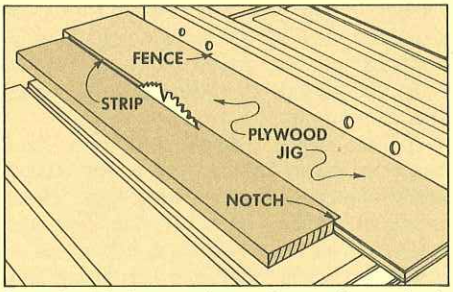

Before adding this second strip, cut two small squares of ¼" plywood. Glue the plywood squares to the ends of the first fence, and then add the top strip. This will form a ¼" groove for a carriage bolt that holds the wooden stop block to the fence.

**USING THE JIG.** To get the best (cleanest) cuts when using this jig, I use a three-cut procedure. First, cut all of the pieces to a rough length (about ½" longer than needed). Then cut a clean end on one end of each rough piece.

Mark the final length on one of the pieces (measuring from the clean end), and adjust the stop block so the cut is made on this mark. All remaining pieces can be cut to identical length using the block as a sure stop for the final length.

### RIPPING JIG

The second jig is used for ripping very narrow strips, like the tambour strips for the T.V. Cabinet shown in this issue. The normal procedure when cutting narrow strips is to work off the *outside* of the board. (If the cut is made so the strip is between the blade and the rip fence, there's a danger of kickback.)



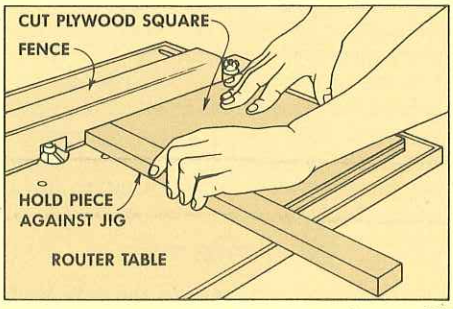

But this procedure is kind of a hassle because you have to re-set the fence for each cut. To get around this problem, I use a push shoe that allows you to rip very narrow pieces *without* re-setting the fence.

To make this shoe, rip a piece of plywood to a width of about 6". Then make a second (partial) cut about ¼" from the outside edge of the shoe. Stop this cut 3" to 4" from the end of the plywood and cut off the loose edge with a hand saw. This will create a small "heel" (stop) at the end of the shoe.

To rip the tambour strips, hold the shoe firmly against the fence and measure the width of cut you want (⅜" in this case) from the left side of the shoe to the inside of the blade. Then use the shoe to push the workpiece through the blade.

### ROUTING NARROW PIECES

One last (very simple) jig. When I chamfered the top edges of the table legs for the Coffee Table, I wanted to use the router table. But making any kind of cut on the end of a long narrow workpiece (like a table leg) is awkward at best, and sometimes dangerous. The problem is that you can't hold the workpiece square to the fence as you feed it through the bit.




To get around this problem I use a simple piece of plywood as a stabilizing guide. Just hold the workpiece against the plywood to keep it square with the fence as you move it through the bit.

# Tambour T.V. Cabinet

## VIDEO EQUIPMENT — OUT OF SIGHT

Donkey Kong. Can you believe that's the name for one of those new video games? Of course as soon as I found out about it, I had to be the first on my block to get in on all this excitement.

All you need, I discovered, is a video home computer (Atari), some "joy sticks" and a collection of game cartridges. There is one drawback however. One evening while I was absorbed in a hot game of Space Invaders, I missed the latest episode of "Dallas." So, now I needed a video cassette recorder to tape the shows I missed while I was playing video games.

Modern electronics has made relaxation a real challenge. Almost overnight, all sorts of video attachments have come out to keep everyone glued to the tube.

But there is a silver lining to this electronic cloud. All of these gizmos need a home. A good excuse, I thought, to break away from the tube, head for the shop and build a T.V. cabinet to store all these gadgets.

I decided to have some (old-fashioned) fun and build this cabinet with a tambour (roll-top) door in front of the T.V. Then, with a bow to contemporary styling, I also thought it would be nice to have smoked-glass doors in front of the video storage compartment. And as it turned out, these two features provided more challenges than Pac Man.




### DIMENSIONS

This cabinet is designed to hold a 19″ television set, a video recorder and a video computer game. Since all of these things can vary widely in size from model to model, you may have to alter the dimensions of this cabinet.

The maximum usable space in the T.V. compartment (with the tambour door open) measures 28″ wide by 19½″ high. And the usable area for the two shelves (behind the glass doors) is 26″ wide by 8½″ high, and 16½″ deep. These dimensions should be large enough for most video components. But you may want to check before you build.

### THE CABINET SIDES

I started construction with the two "web frame" sides of the cabinet. These frames are fairly easy to build — they're just 5/4 solid oak frames with ¾″ oak veneer plywood panels.

**THE STILES.** After I had decided on the overall dimensions of cabinet (allowing for the usable space requirements given above), I cut the pieces for the frame from 5/4 oak. (5/4 stock is 1$\frac{1}{16}$″ thick.) The stiles (G, vertical pieces) are ripped to a width of 2″ and cut to length to the full height of the cabinet (48″).

**THE RAILS.** The rails (H, horizontal pieces) are also ripped to a width of 2″ and a length of 15¾″. (Since I wanted the sides to be a total of 19″ wide, the length of the rails accounts for 15″ between the stiles, plus ¾″ for the two ⅜″-long stub tenons.)

After these pieces were cut to final width and length, I cut a ⅜″-wide by ⅜″-deep groove on the inside edge of each piece. As shown in Figure 2, this groove is positioned ⅜″ from the *inside* face of each piece.

Next, stub tenons are cut on each of the rails. This is simply a matter of cutting rabbets on the ends of each rail, making sure the shoulder-to-shoulder distance between the rabbets is 15″, see Fig. 1.

**PLYWOOD PANEL.** Now, the frames (rails and stiles) can be dry-clamped together to get measurements for the plywood panels (A). I cut these panels a bare $\frac{1}{16}$″ short of the groove-to-groove measurements of the frames to allow for glue squeeze-out.

Next, cut rabbets on the *inside* face of all four sides of the plywood panels. This should leave ⅜″ x ⅜″ tongues that fit in the grooves in the frames. These rabbets should be cut so the inside face to the plywood panel is exactly flush with the inside face of the frame, see Fig. 2.

Finally, the frames and plywood panels can be glued and clamped together.

## GROOVES FOR SHELVES

After the frames are assembled, mark out the position of the stopped grooves used to mount the top (B), the bottom (D) and the two shelves (C and E), see Fig. 1.

I cut each of these ⅜" x ⅜" grooves with a router (using a piece of scrap plywood clamped to the frame as a guide for the base of the router). Each groove stops 1¼" short of both the front and back edges of the frame . . . except the front edge of the third groove from the top; it's stopped 3" from the front edge, see Fig. 1.

**CHAMFER EDGES.** After the grooves were cut, I chamfered all edges of the frames on a router table with a chamfer bit, see Fig. 3.

## TAMBOUR GROOVE

The tambour for this cabinet rides in an L-shaped groove. Since the tambour grooves on both sides must match perfectly, I made a template to cut them.

**THE TEMPLATE.** The dimensions for the template (shown in Fig. 4) are based on using a router with a 7/16" outer-diameter guide bushing. This is a fairly standard size, and should be available for any make of router.

To make the template, cut a piece of ¼" Masonite 17⅞" wide by 24" long, and clamp it to one of the cabinet's side frames so the top edge of the template is 1⅝" from the top edge of the frame.

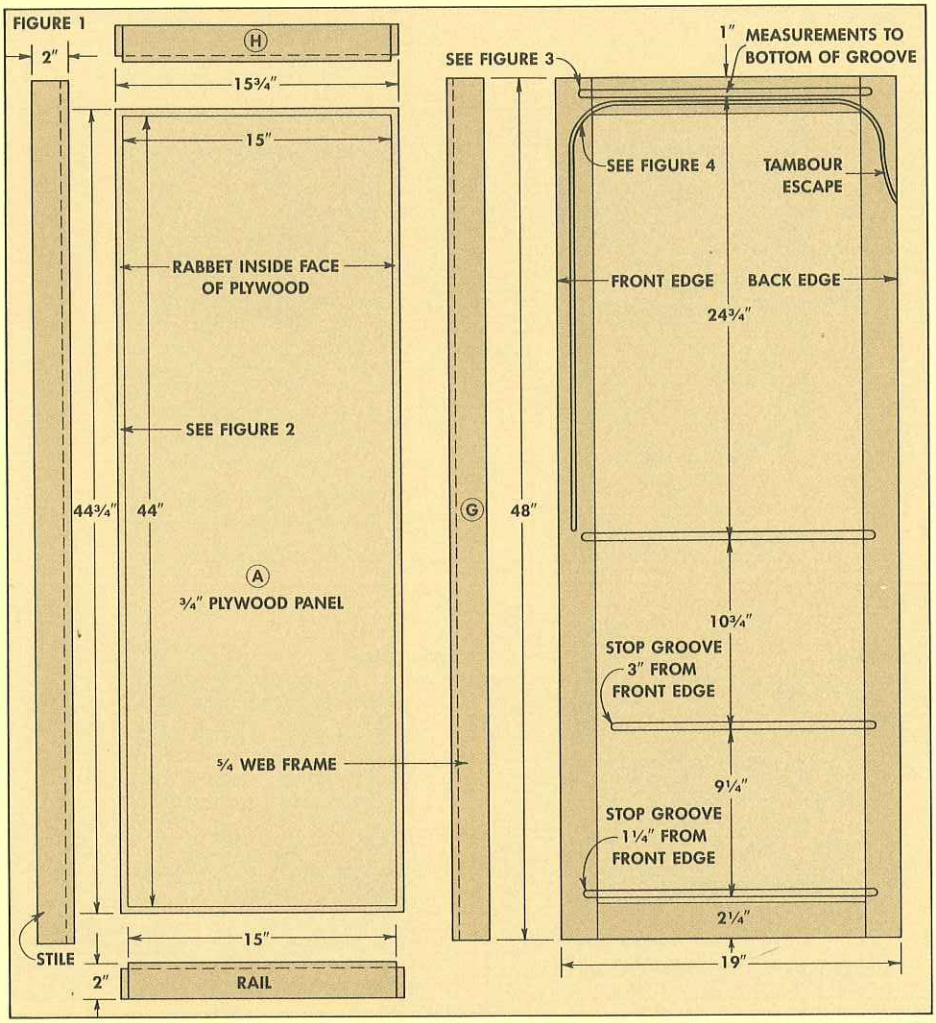
Next, 2⅛" radius curves are marked on the front and back corners. The center point for the front curve is 2⅛" from both edges of the template.

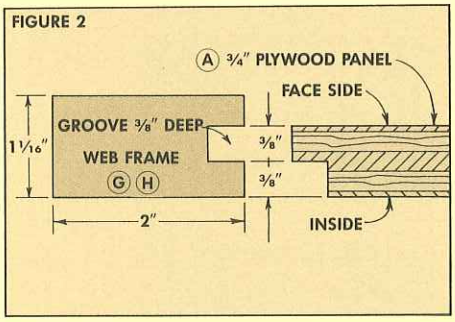
The center point of the back curve is 2⅛" from the top edge and 3¼" from the back edge. After marking this back radius, continue the curve gently out to the back edge, see Fig. 4. (Any gentle curve will work here, as long as it's not too abrupt.)

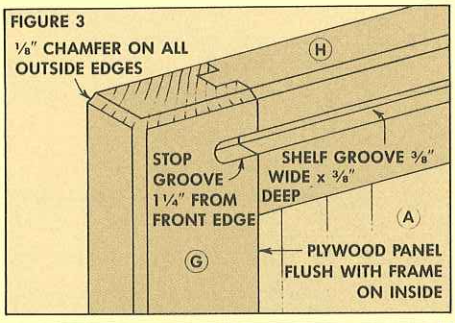
Once the curves are marked, cut the template to shape with a sabre saw. Then carefully sand out any roughness on the cut edges of the template.

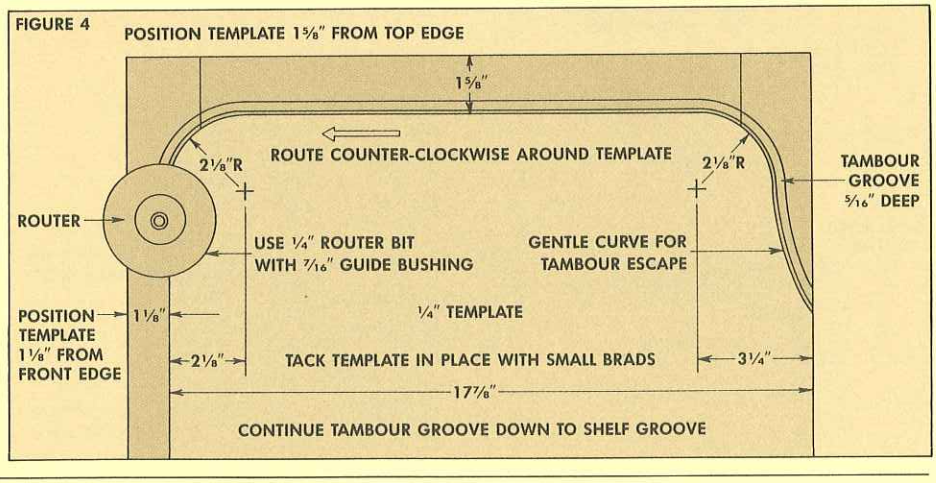
**ROUTING THE GROOVE.** Making the template was the hard part. Routing the groove is relatively easy. Tack the template in place with small brads as shown in Fig. 4. (This will position the template so the groove is cut only on the solid wood, and not on any part of the plywood panel.) Then rout the groove with a ¼" carbide-tipped straight router bit set to a cutting depth of 5/16".

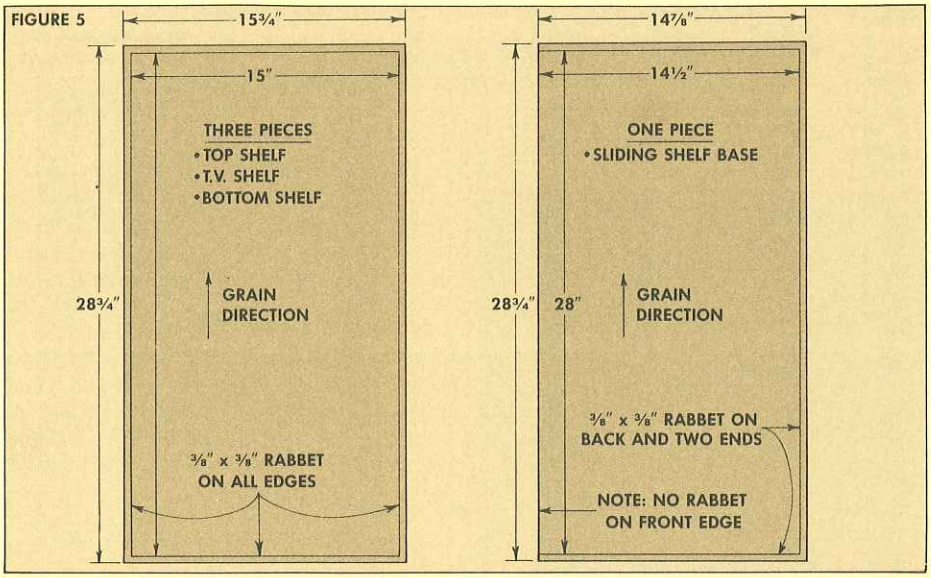
When routing the tambour groove on the *left* side frame, start the router on the *back* edge (as shown in Fig. 4). Then to rout the groove on the *right* side frame, start the router at the *front* edge (at the self groove). By using this procedure, the router always moves to the left so the rotation of the bit forces the guide bushing against the template.

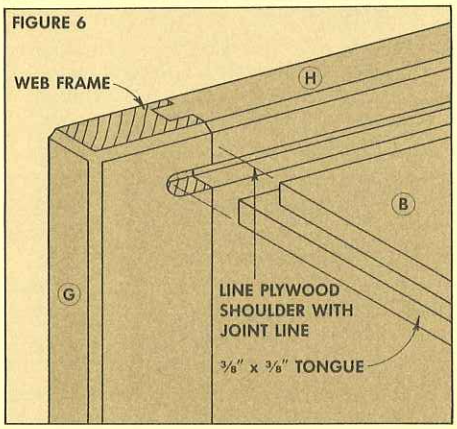


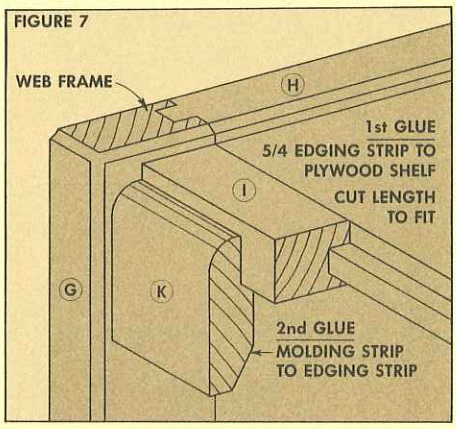



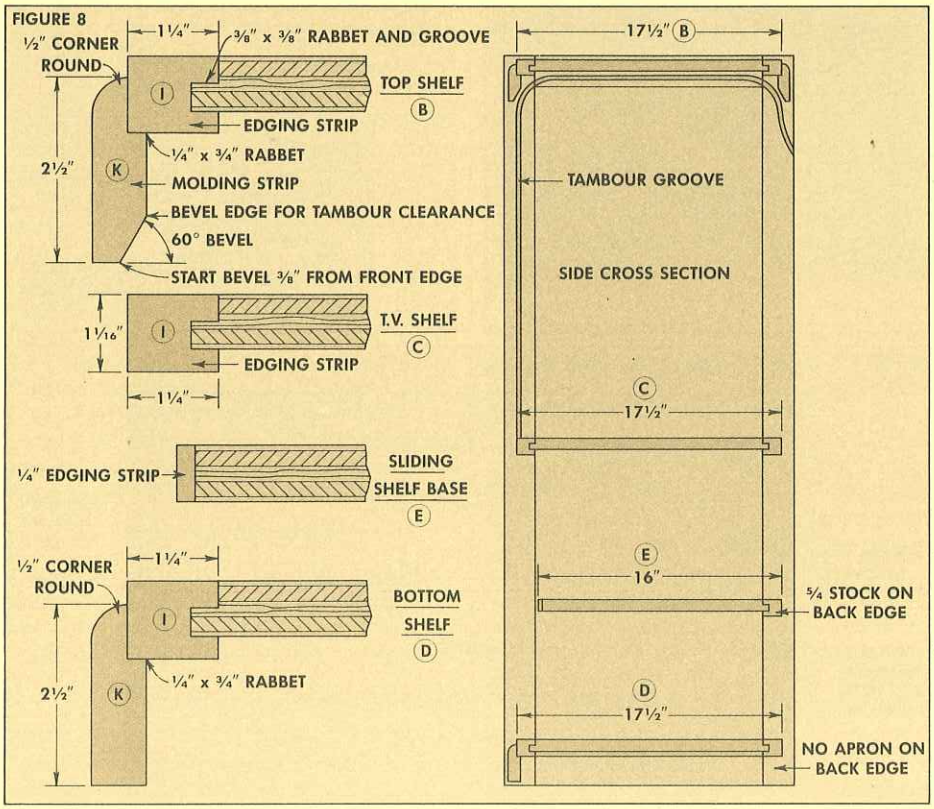






### TOP, BOTTOM AND SHELVES

Once the cabinet's sides are completed, the top (B), bottom (D) and two shelves (C and E) can be cut from the remaining ¾" oak plywood (see Cutting Diagram on page 19). Three of these pieces (the top, the T.V. shelf, and the bottom) are ripped to a width of 15¾". The second shelf (E) is ripped to a width of 14⅞", see Fig. 5.

Then all four pieces are cut to a length of 28¾". It's rather important that all four pieces be cut to exactly the same length. To do this, I cut them a little long to begin with and then trimmed them with the panel cutting jig shown on page 13.

**RABBETS.** Next, rabbets are cut on all four pieces in order to form ⅜" x ⅜" tongues, see Fig. 6. These rabbets are cut on all four edges of three of the pieces (B, D and C). However, the front edge of the base for the sliding shelf (E), is *not* rabbeted, see Fig. 8.

Shop Note: When cutting rabbets in plywood, you get the cleanest cut with a router, rather than a table saw blade. I used the router table (shown in *Woodsmith* No. 20) to cut these rabbets.

After the rabbets are cut, all four pieces can be glued and clamped into the grooves in the side frames.

### EDGING AND MOLDING STRIPS

The raw plywood edges of these four pieces are covered with solid oak edging strips. First, cut seven edging strips out of 5/4 stock to fit exactly between the cabinet sides. (Only seven pieces are needed because the front edge of the sliding shelf base is covered with a simple ¼" edging strip, see Fig. 8.)

Next, cut a ⅜" x ⅜" groove on the edge of each edging strip to fit on the tongues of the plywood, see Figs. 7 and 8. Once these strips are cut they can be glued and clamped to the plywood tongues.

**MOLDING STRIPS.** The top and bottom of the cabinet also have molded facing strips, see Fig. 7. Two of these strips (one on the front and one on the back of the top) are used to cover the curve of the tambour. The third molding strip (on the bottom) serves as a kickboard.

To make these strips, rip three boards 2½" wide and cut them to length to fit between the sides. Then cut a 30° bevel on the back of the two strips for the top, see detail in Fig. 8. Next, round over the top outside corner of all three pieces with a ½" corner round bit. (I did this on the router table.) And finally, cut a ¼" deep x ¾" wide rabbet opposite the rounded corners. After these strips are cut, they can be glued to the edging strips.

### THE SLIDING SHELF

Depending on what you plan to use this cabinet for, the sliding shelf may not be

necessary. I added it for a video recorder because most recorders need access to the top to load the video cassette.

The width of this sliding shelf is cut a total of 2" less than the inside width of the cabinet (to allow 1" space on both ends). The depth is exactly the same as the depth of the base shelf (E).

After this sliding shelf is cut to size, cut a ⅜" rabbet on the front edge to leave a tongue, see Fig. 9. Then the pull bar (O) is ripped to a width of 2", and a ⅜" x ⅜" groove is cut to mate with the tongue on the shelf. Finally, a finger grip is cut on the back of the pull bar with a ½" cove bit (on the router table), see detail in Fig. 9.

The sliding shelf is mounted to the base shelf with metal drawer (shelf) slides. The ones I used require two dadoes on the bottom of the sliding shelf for plastic guide runners. These slides (with complete instructions) are available from The Woodworkers' Store Catalog (Cat. No. D7521-16").

### THE CABINET BACK

Although there's no back on the part of the cabinet behind the T.V. set, I wanted to add a back behind the shelf area to strengthen the cabinet (to prevent racking). I went all out and made a web frame with a ¼" plywood panel, see Fig. 10.

This frame fits between the sides of the cabinet and is attached (screwed) to the back edge of the T.V. shelf and to the back edge of the cabinet's bottom.

First, cut the rails and stiles to size to fit this area. Then cut a ¼" x ¼" groove on the inside edge of each piece for the plywood panel. Finally, cut ¼"-long stub tenons on the ends of the rails to fit the grooves, see detail in Fig. 10. Before gluing this web frame together, I cut two slots in the plywood panel to run the wires for the video equipment.

### FINISHING

The tambour door and the glass doors still have to be mounted to the cabinet. (See the next two pages.) However, before these doors were mounted, I finished the cabinet with Watco Danish Oil.

The best way we've found to apply Watco oil (especially on open-pored wood like oak) is to use a liberal amount of oil and wet-sand all surfaces with 220-grit (Wet-or-Dry) silicon carbide paper.

As you sand, small amounts of sawdust will mix with the oil to form a thin paste that fills the pores of the wood. (If this paste gets too thick, just add more oil as you sand.)

When you're done sanding, wipe off the excess paste and oil, and let the whole thing sit for about 1 hour. Then add another coat of oil (without sanding). This method produces a natural-looking finish that's as soft as a baby's bottom.

FIGURE 9

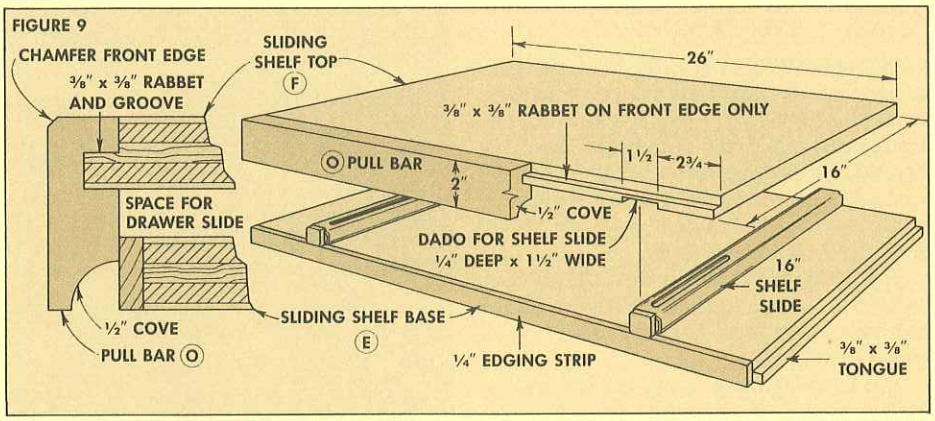



FIGURE 10

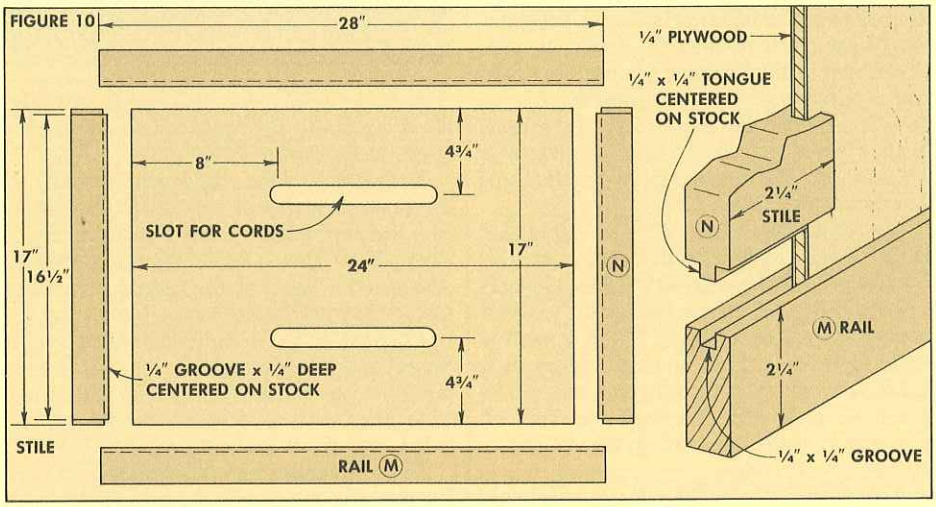
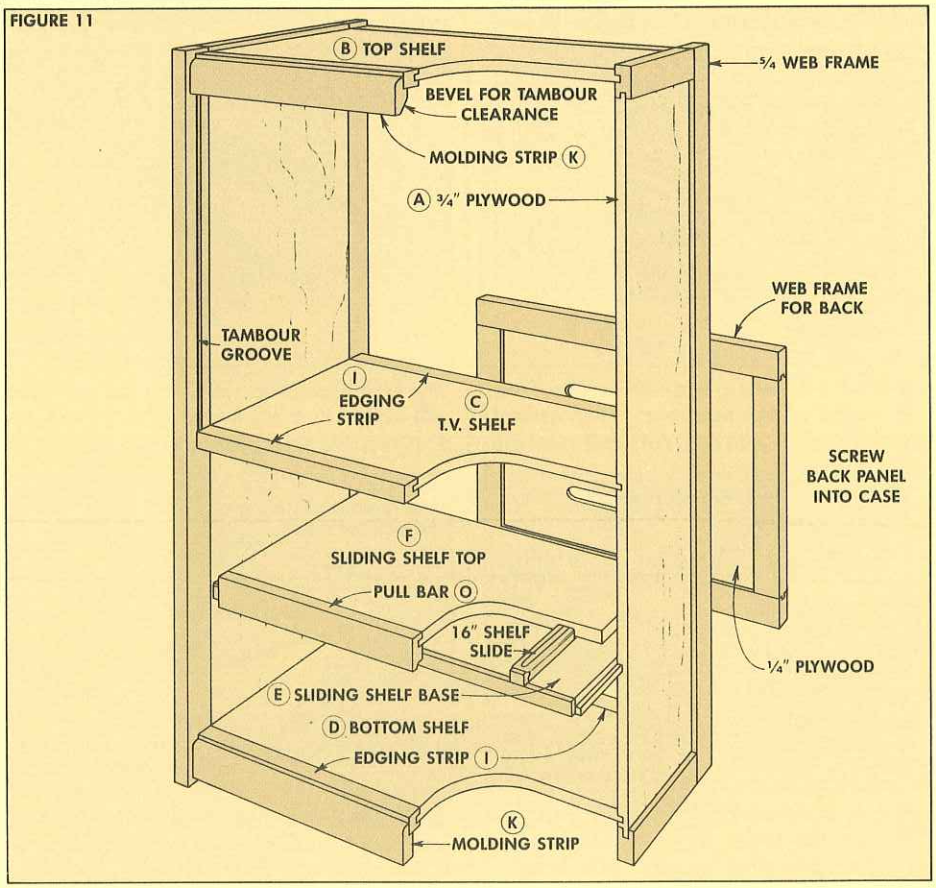



FIGURE 11



### THE TAMBOUR

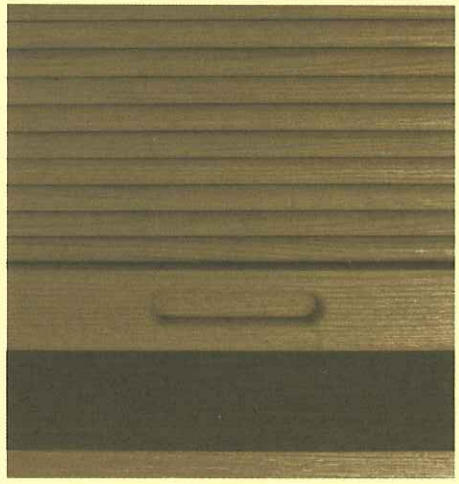
It just doesn't seem fair that something as mysterious as a tambour should be so easy to build. The secret behind a tambour (roll-top) is a simple piece of canvas. The tambour strips are glued to a canvas backing that's flexible enough to follow the grooves in the cabinet. That's it. Easy enough, but it does require some work.

The tambour I made for the T.V. cabinet is kind of a "roll-and-pleat" design. Each tambour strip is a "custom-made" half-round molding strip.

You need 30 strips in all, but it's best to make at least 40 of these strips because there's bound to be some waste. All of these strips are cut from 4/4 (13/16" thick) boards. As shown in the Cutting Diagram on page 19, I used four 5½"-wide boards, cut to length to match the final width of the tambour. (This width should be 28½", which is ⅛" less than the distance between the tambour grooves in the cabinet.)

**ROUND EDGES.** I used a router table and table saw to make the half-round strips. First I rounded over both edges of each board with a ⅜" corner-round bit (on the router table), see Fig. 1. Then I used a notched jig to cut off ⅜"-thick strips on a table saw, see Fig. 2. (More on this jig is given on page 13.) It's just a matter of repeating these steps until you have about 40 half-round strips.

**MOUNTING STRIP.** You'll also need a mounting strip (used to mount the lift bar).



This strip is ⅜" thick by 1" wide (see Fig. 3). I used the jig again to resaw it off a piece of 5/4 scrap.

**SELECTION.** After the strips are cut, let them sit for a day or two until they get all the warping and twisting out of their system. Then the selection process begins: choose the best of the bunch, avoiding those that are badly warped or twisted.

**GLUING JIG.** To hold all these strips together while gluing on the canvas, I used a simple jig, see Fig. 4. This jig is just two side bars with a ⅜"-deep rabbet on one edge, and front and back cleats.

Lay the mounting strip and the 30 tambour strips *face down* on a piece of scrap plywood, and tack the rabbeted side bars over the ends of the strips. (Make sure the strips are square with the hold-down bars.) Then tack the back cleat in place, push the strips tight against this cleat, and tack down the front cleat to hold them all in place.

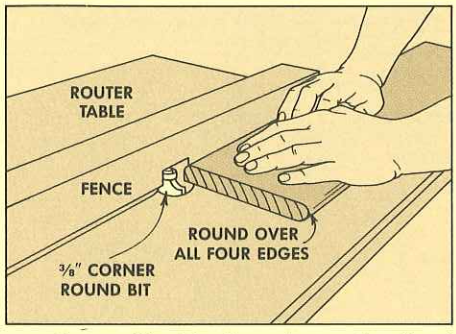
**GLUE ON CANVAS.** Now the canvas backing can be glued to the backs of the strips. I used a light-weight artist's canvas that's available at art stores. However, denim (blue jean material) could also be used.

Spread a thin layer of glue (I used Titebond) across all of the strips. Then lay the canvas (or denim) over the tambour strips and press it in place with a veneer roller or a rolling pin.

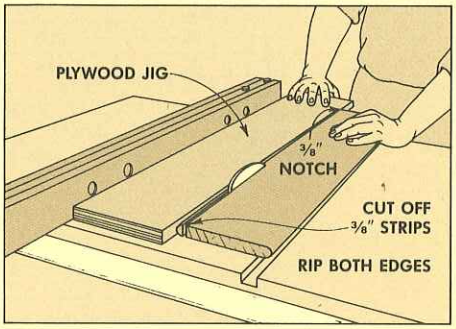
After about 1 hour, *very carefully* take the tambour out of the jig and "crack" the joints. If any glue has seeped through the cracks between the strips, you want to crack them apart before the glue has a chance to harden. As you crack the joints, roll the tambour into a loose cylinder. Stand this cylinder on end and let the glue cure overnight.

**RABBET.** Since the strips of this tambour are ⅜" thick, the outside edges of the tambour need to be rabbeted to fit the ¼"-wide grooves in the cabinet. I cut these rabbets on a table saw, see Fig. 6.

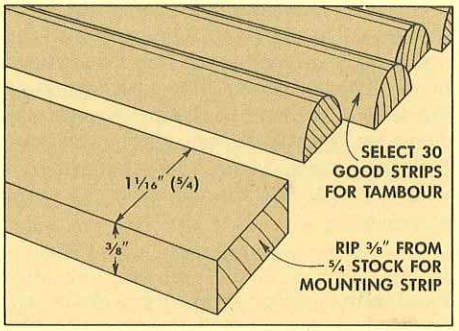
Set the height of the blade to leave a 3/16"-thick by ¼"-long tongue. It's best to kind of sneak up on this cut, testing the fit in the tambour groove until the tambour slides easily (without binding) but doesn't rattle around too much.



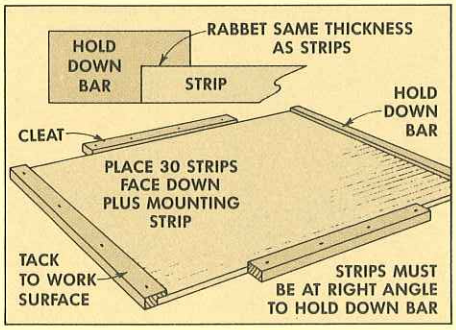

**1** *Cut 5½"-wide boards to the final length of the tambour. Then round-over both edges with a ⅜" corner-round bit.*



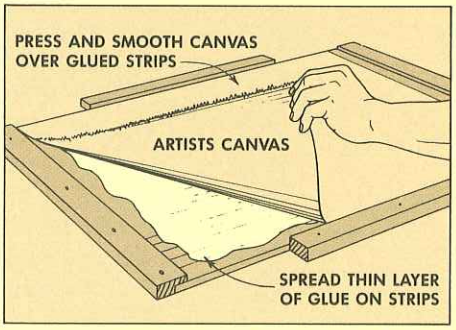

**2** *Use a notched jig to rip the tambour strips to a thickness of ⅜". Then repeat process until you have 40 strips.*



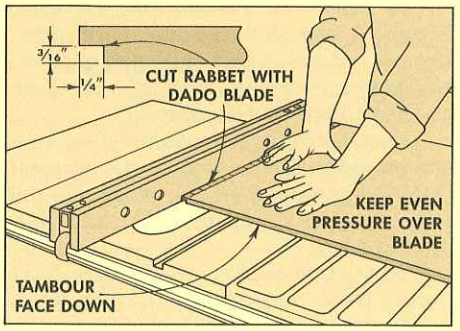

**3** *You'll also need a ⅜"-thick mounting strip. I cut this from a piece of 5/4 scrap to get the final width of 1 1/16".*




**4** *Use a jig with rabbeted side bars to hold the strips in place. Make sure strips are positioned square with bars.*




**5** *Spread thin layer of glue over back of tambour. Then lay canvas (or denim) in place and roll down with a rolling pin.*




**6** *Cut rabbets on both edges of the tambour to leave ¼"-wide by 3/16"-thick tongues to fit the ¼"-wide grooves.*

## THE LIFT BAR

The last step on the tambour is to make a lift bar to match the molding strips on the top and bottom of the cabinet. Rip a board to a width of 2½" and to a length that's ⅛" less than the inside measurement of the cabinet (to allow clearance). Then resaw it (rip on edge) to a thickness of ⅜".

**FINGER SLOT.** I decided to get a little fancy with the finger slot on the lift bar. Drill two 1"-diameter holes 4" apart, see Fig. 7. These holes are centered 1⅛" down from the top edge of the lift bar. Since the bottom edge of the lift bar is rounded-over, this puts the finger slot at the *visual* center of the lift bar.

After the holes are drilled, clean out the center with a sabre saw and file the edges smooth. Then round-over the inside edges of the finger slot with a ¼" corner-round bit (on the router table). Also, round the bottom edge of the lift bar with a ½" corner-round bit, see Fig. 7.

**ATTACH.** To mount the lift bar, first slide the tambour into the cabinet. Then the bar is attached (from the back side) to the mounting strip with ¾" pan-head screws. (I used pan-head screws because I needed to add a washer so the point of the screw didn't go through the front of the lift bar, see cross-section in Fig. 8.)

Finally, I added a piece of weatherstrip to the bottom of the mounting strip to act as a shock absorber, see Fig. 9.

## GLASS DOORS

The last step on this cabinet is to mount the smoked-glass doors. The whole trick to mounting glass doors is the hardware. The hardware I used is available from The Woodworkers' Store catalog.

The door hinges are listed as "Pivot Hinges For Glass Doors" Cat. No. D5612 (polished chrome), $2.35 per pair. I went ahead and mounted the hinges (see Fig. 10) in order to get the final measurements for the glass doors.

The height of each door should be a total of ⅜" less than the height of the cabinet opening. (This allows 3/16" at the top and bottom for the hinges.) The width of each door should allow 3/16" between the two doors and about 3/16" on the outside edge (between the door and the side of the cabinet). I had the doors cut (at a local glass company) a total of ⅜" less than one-half the width of the cabinet opening to allow a little extra clearance.

The doors are mounted in the U-channel of the door hinge and held in place with two small screws and a friction plate. I also mounted two "No-Bore Glass Door Pulls" Cat. No. D3410 (Polished Chrome), $2.95 each. These handles just mount to the edge of the glass. Finally, I added small magnetic catches behind the handles to hold the doors closed.

FIGURE 7

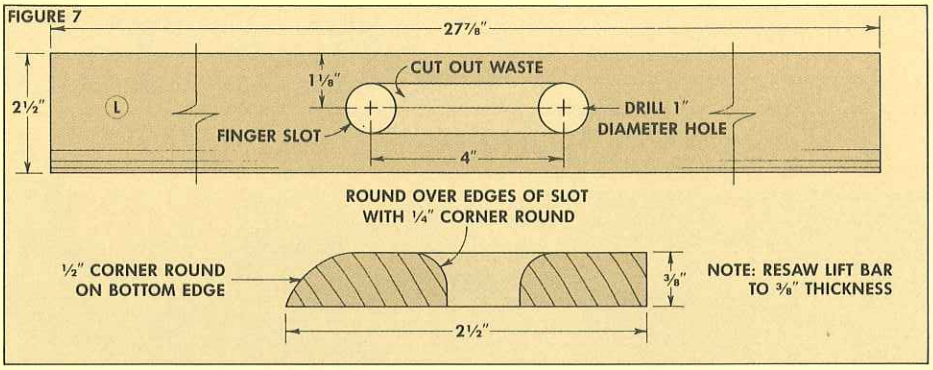



FIGURE 8

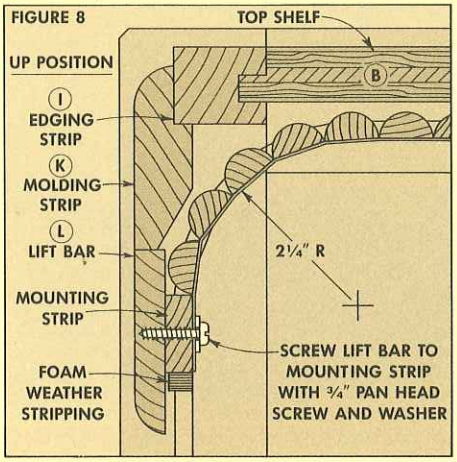



FIGURE 9

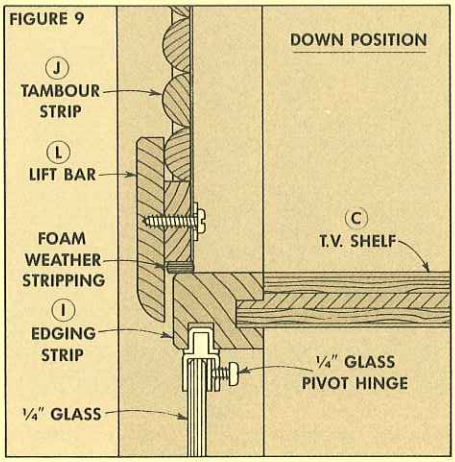
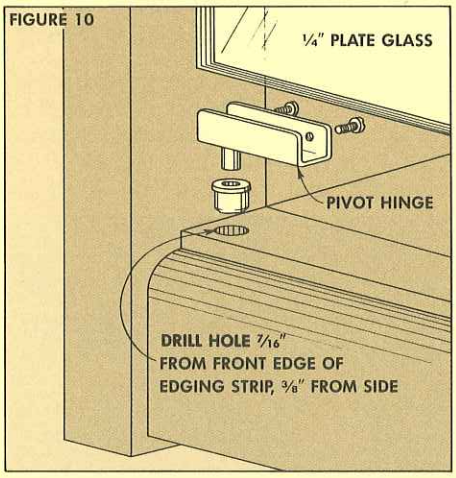


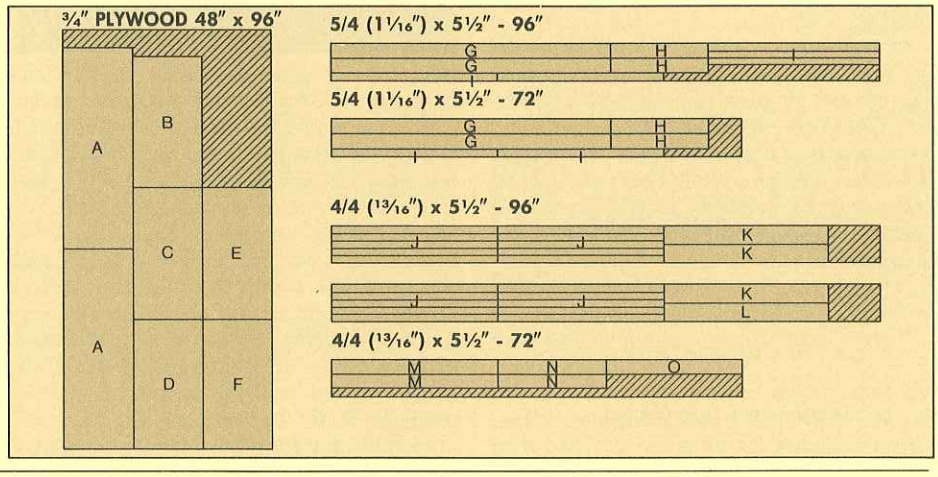

FIGURE 10




## MATERIALS LIST

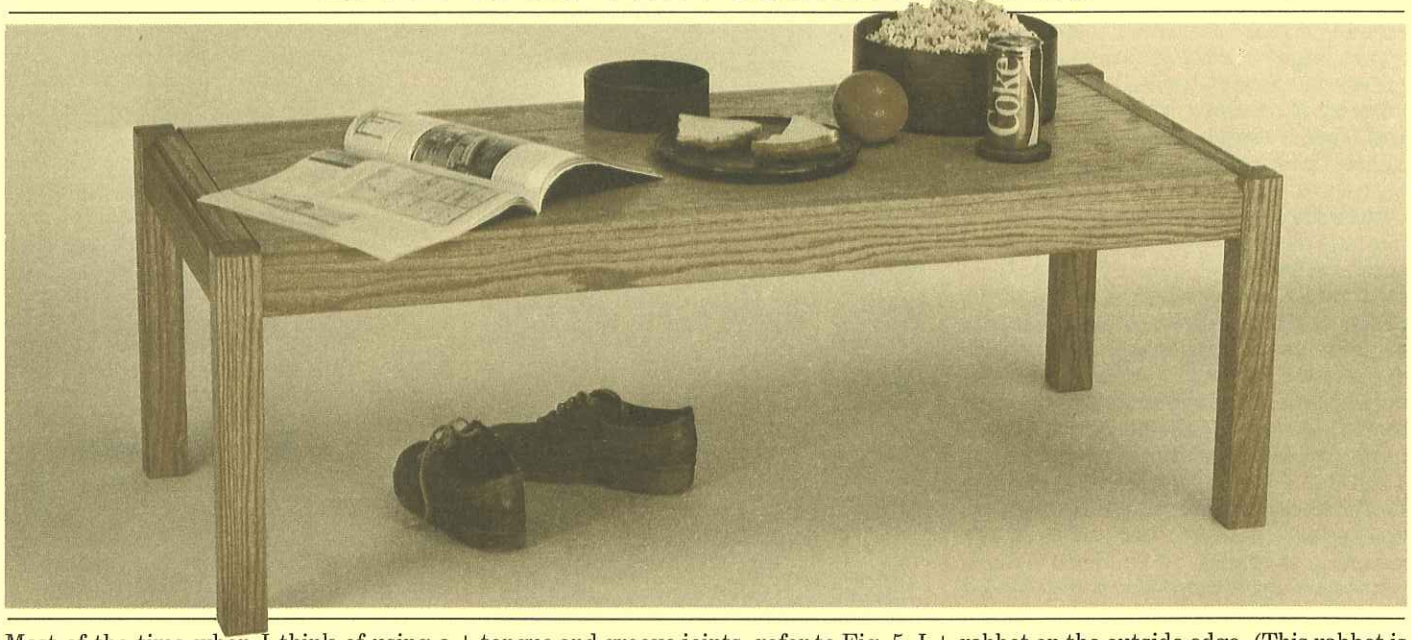
| | | |
|---|---|---|
| | Overall Dimensions: 48½"H x 30"W - 19"L | |
| A | Sides (2) | ¾ x 15¾ - 44¾ |
| B | Top Shelf (1) | ¾ x 15¾ - 28¾ |
| C | T.V. Shelf (1) | ¾ x 15¾ - 28¾ |
| D | Bottom Shelf (1) | ¾ x 15¾ - 28¾ |
| E | Sliding Shelf Base (1) | ¾ x 14⅞ - 28¾ |
| F | Sliding Shelf (1) | ¾ x 16 - 26 |
| G | Side Stiles (4) | 1 1/16 x 2 - 48 |
| H | Side Rails (4) | 1 1/16 x 2 - 15¾ |
| I | Edging Strips (7) | 1 1/16 x 1¼ - 28 |
| J | Tambour Strips (40) | 13/16 x ⅜ - 28½ |
| K | Molding Pieces (3) | 13/16 x 2½ - 28 |
| L | Lift Bar (1) | ⅜ x 2½ - 27⅞ |
| M | Back Rails (2) | 13/16 x 2¼ - 28 |
| N | Back Stiles (2) | 13/16 x 2¼ - 17 |
| O | Pull Out Bar (1) | 13/16 x 2 - 26 |

## CUTTING DIAGRAM



# Coffee Table

## CLEAN LINES WITH SUBTLE ACCENTS




Most of the time when I think of using a router, I think in terms of making a lot of fancy molding cuts. But a router can also be used to add a few subtle touches that help define the shape and design of a project.

This coffee table is a good example of putting a router to work. Actually, I should say a router table (like the one shown in *Woodsmith* No. 20). I used a router table to make most of the joints for this table, as well as the molding (chamfer) cuts on the pieces for the top and legs.

### THE PLYWOOD TOP

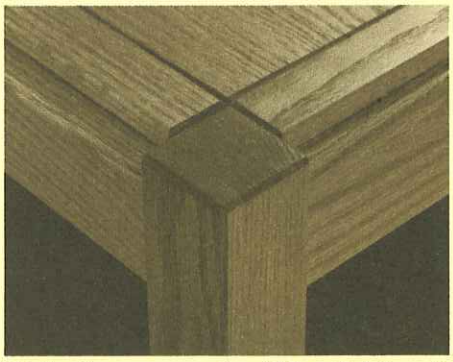
Normally, when building a table, I would start with the base (the legs and aprons) and then add the top. But for this coffee table I found it easier to start with the top because of the way the notched corners of the top fit around the legs, see detail photo at right.

**CUTTING THE PLYWOOD.** The first step is to cut a piece of ¾" plywood to size. (I used oak-veneer plywood for this table.) The plywood is ripped to a width of 18½" first and then cut to a length of 44½", see Fig. 1. However, cutting a 2' x 4' sheet of plywood down to a 44½" length is very awkward because you can't use the rip fence to guide the piece. Instead, I used the panel cutting jig (shown on page 13) to cut the plywood to length.

### BANDING STRIPS

All four edges of the plywood top are banded with solid (oak) edging strips. These strips are joined to the plywood with tongue and groove joints, refer to Fig. 5. I found it was best to cut the grooves in the banding strips before cutting the tongues on the plywood.

Cut the four strips to a final width of 1⅜" and to rough length (about 1" longer than needed), see Fig. 1. Since these strips are 13/16" thick (the actual thickness of 4/4 hardwood) and the plywood is only ¾"



thick, the grooves should be slightly off-center (so the top face of the banding strips is flush with the top face of the plywood).

**CUT THE GROOVES.** Mark what will be the top face of each banding strip. Then I used a ¼" straight bit on the router table to cut the 5/16"-deep grooves. Set the fence exactly ¼" from the bit (see Fig. 3), and use a feather clamp to force the marked face of the strip against the fence, see Fig. 2. When the groove is cut, it should leave a ¼" shoulder on the top edge, then the ¼" groove in the middle, and finally a 5/16" shoulder on the bottom, see Fig. 5.

**RABBET.** Each of these pieces also has a rabbet on the outside edge. (This rabbet is used later to mount the table top to the aprons.) To cut this rabbet, switch to a ¾" straight bit set to a depth of cut of ¼". Then adjust the fence so the rabbet *leaves* a ⅜"-wide tongue, see Fig. 4.

This cut is made with the banding strip on edge and the marked face of the strip facing out. (Cutting the rabbet this way ensures a fairly clean corner on the tongue. This corner will be visible when the table top is joined to the aprons.)

### TONGUES ON PLYWOOD

Next, tongues are cut on all four edges of the plywood top to fit the grooves in the banding strips, see Fig. 6. Once again, I did this on the router table. Set up the router table to cut a ¼" x ¼" rabbet using a ¾" straight bit.

What you want to do is cut two rabbets (one on each face) to leave a ¼"-thick tongue in the center, see Fig. 6. I made several test cuts on a piece of scrap plywood until the tongues fit snugly in the grooves.

**TRIM BANDING STRIPS.** After the tongues are cut on the plywood top, the banding strips can be cut to final length. The end of each strip should stop at the shoulders of the rabbets on the top face of the plywood, refer to Fig. 10. This will leave an open corner that fits around the legs of the table.

### ASSEMBLY

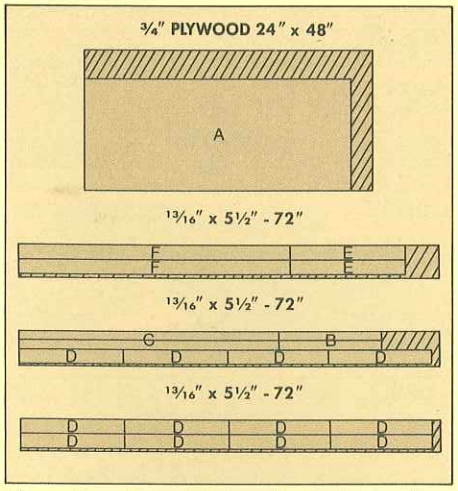
Now the banding strips can be glued and clamped to the edges of the plywood top.

## MATERIALS LIST

**Overall Dimensions: 16½"H x 22"W - 48"L**

| | | |
|---|---|---|
| A | Plywood Top (1) | ¾ x 18½ - 44½ |
| B | Short Edging Strips (2) | 13/16 x 1⅜ - 18 |
| C | Long Edging Strips (2) | 13/16 x 1⅜ - 44 |
| D | Leg Pieces (12) | 13/16 x 2¼ - 18 |
| E | Short Aprons (2) | 13/16 x 2½ - 20 |
| F | Long Aprons (2) | 13/16 x 2½ - 46 |

## CUTTING DIAGRAM




Since there's a rabbet on the outside edges of all the banding strips, it helps to cut a small filler strip so the clamp contacts a full-thickness edge, see Fig. 7.

**TRIM CORNERS.** Once the glue is dry, trim the excess plywood from the open corners of the top, see Fig. 10. Finally, the surface of the table top should be sanded to remove any variation between the banding strips and the plywood.

## V-GROOVES AND CHAMFER CUTS

No matter how hard I try, I find it very difficult to get the face of a plywood top to match perfectly with solid-wood banding strips. Even when I'm successful, the solid wood strips and plywood top will expand and contract at different rates with seasonal changes in humidity — so there's almost always some variation between the two surfaces.

To get around this problem, I cut a small V-groove right at the joint line of the banding strip and the plywood. This V-groove makes it very difficult to see (or feel) any variation in the two surfaces.

I used a V-groove router bit on the router table to make these cuts, see Fig. 8. The point of the bit should be right on the joint line and the depth of cut should be a scant ⅛". When routing this V-groove, I continued it out along the end grain of the banding strips, see Fig. 10.

**CHAMFER EDGES.** After the V-grooves were cut, I made a matching chamfer cut on all of the outside edges of the banding strips. This was done on the router table with a chamfer bit, see Fig. 9.

FIGURE 1

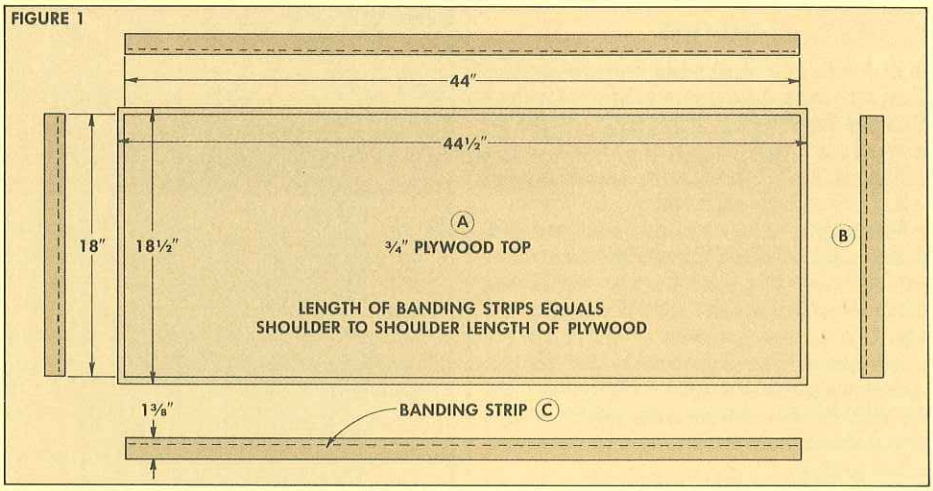



FIGURE 2

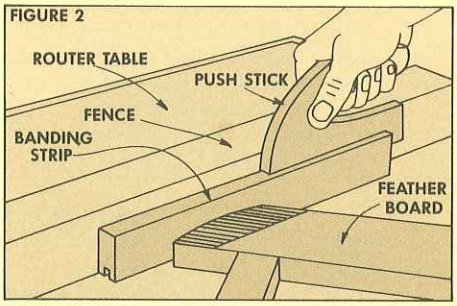



FIGURE 3

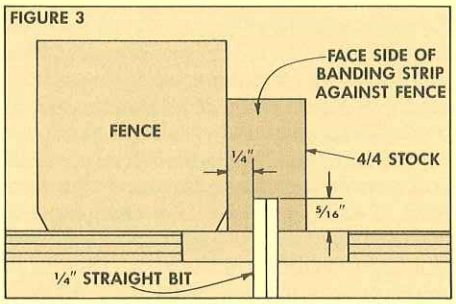



FIGURE 4

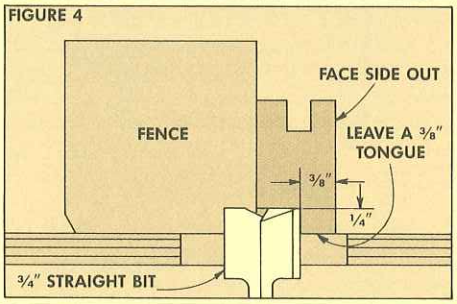



FIGURE 5

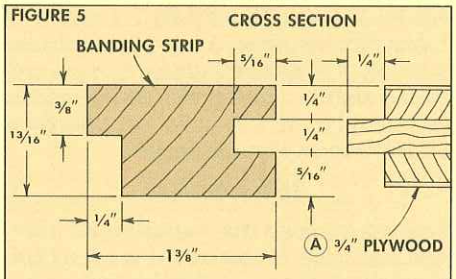



FIGURE 6

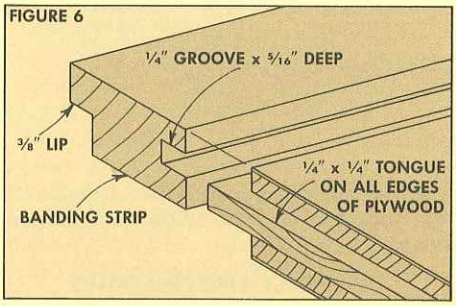



FIGURE 7

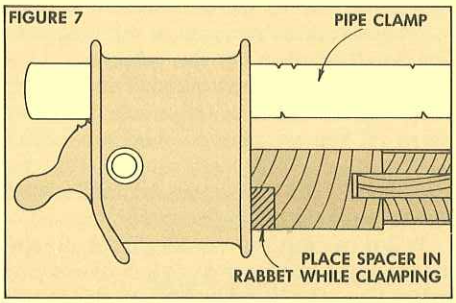



FIGURE 8

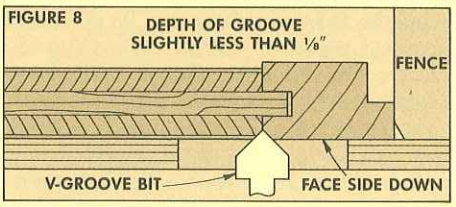



FIGURE 9

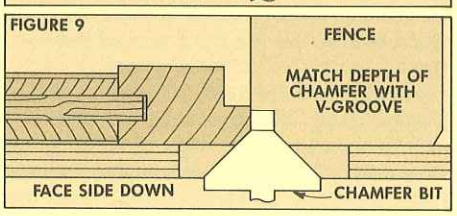
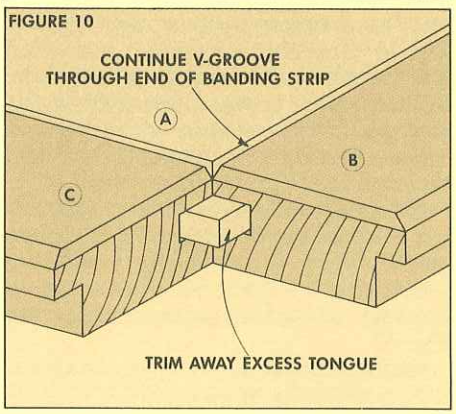



FIGURE 10



## THE LEGS

In order to get blanks big enough for the 2"-square legs, I laminated three pieces of 4/4 stock for each leg. First cut a total of 12 pieces to a rough length of 17" and rough width of 2¼". Then glue three pieces together to form each leg.

When the glue is dry, rip the legs down to final size of 2" x 2", making two cuts in order to keep the joint lines an equal distance from the outside faces of the legs, see Fig. 11.

**MORTISES.** The legs are joined to the aprons with mortise and tenon joints. (See *Woodsmith* No. 18 for complete step-by-step instructions on making a mortise and tenon joint.)

The mortises on these legs are cut 5/16" from the outside edge, and ¾" down from the top edge of the leg, see Fig. 11. (This top measurement allows enough room for the top edge of the apron and the tongue of the banding strip, refer to Fig. 16.)

I arranged the legs in their final position and marked out the mortises so the face grain of each leg would be on the long side of the table, and the edge grain (with the glue lines) would be at the ends. Then I cut the mortises on a drill press by drilling a series of holes with a ⅜" bit.

**CHAMFER EDGES.** After the mortises were cut, I chamfered all four corners and the top and bottom edges of the legs on the router table with a chamfer bit. (See page 13 for more on this technique.)

## THE APRONS

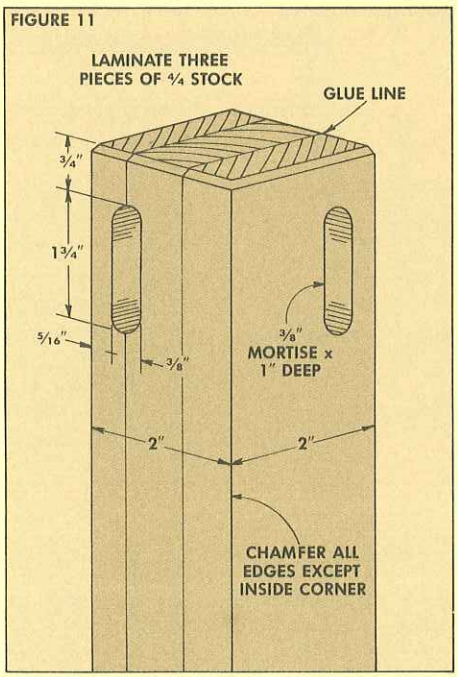
Since the table's top has already been built, the aprons must be cut to accept the dimensions of the top. Rip the four aprons to a width of 2½". Then the aprons are cut to length so they're equal to the length of the banding strips on the table top, plus enough for the tenons on each end.

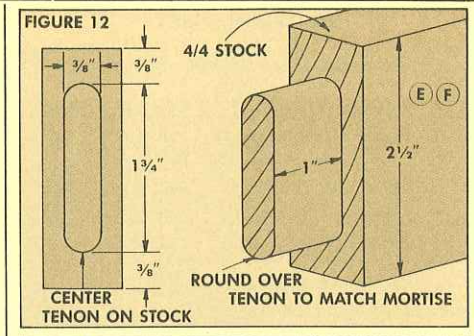
I used the banding strips as a gauge to mark off the shoulder-to-shoulder length of the aprons (the distance between the shoulders of the two tenons.) Then I added 2" (for the two 1"-long tenons).

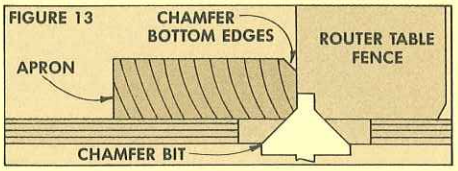
When cutting the tenons, I set up the saw to make a test cut on a piece of scrap to make sure the outside face of the apron met the chamfered edge of the legs, see Fig. 16. Once the outside face was cut, I made a cut on the inside face to set the thickness of the tenon so it fit snugly in the mortise. (This, in effect, is cutting two rabbets, leaving a tenon to fit the width of the mortise.)

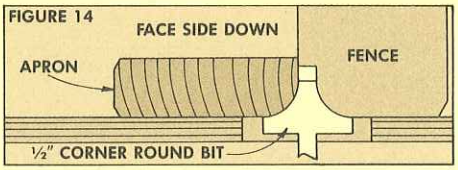
Then the shoulders on the top and bottom edge of the tenon are cut to fit the height of the mortise. Finally, round-over the corners of the tenon with a file so it fits the rounded ends of the mortises, see Fig. 12.

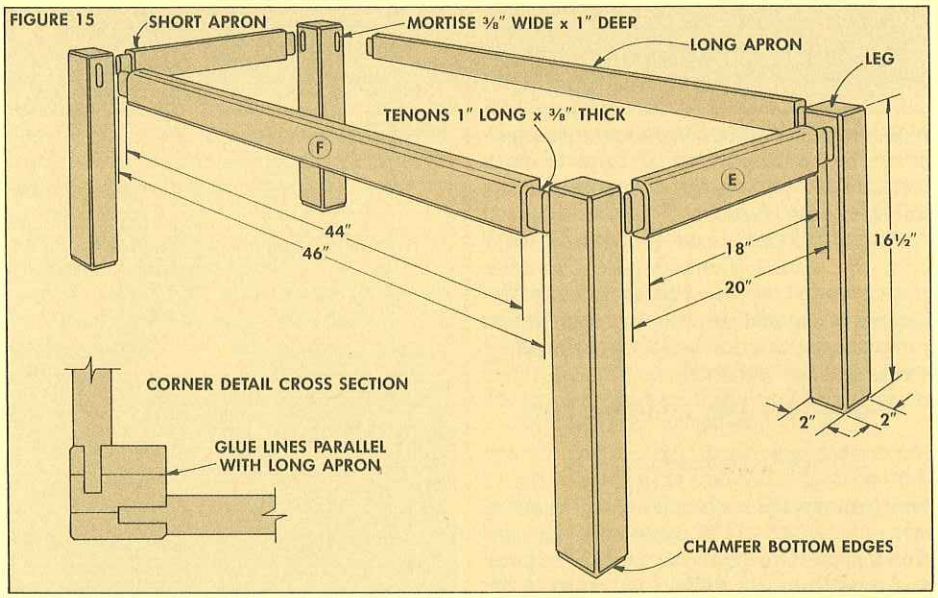
**ROUT EDGES.** The last step on the aprons is to chamfer the two bottom edges of the aprons, see Fig. 13. And then round over the top outside edge with a ½" corner-round bit, see Fig. 14.



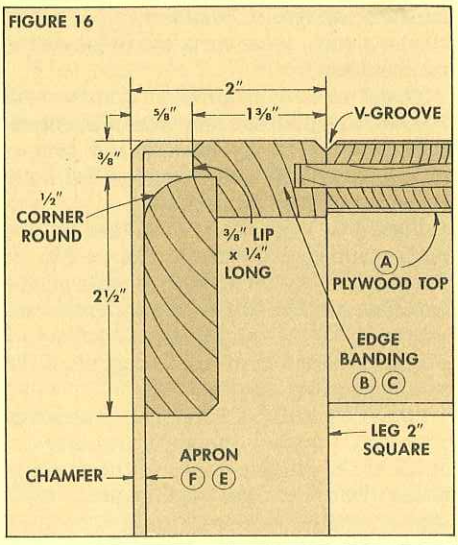




## ASSEMBLY AND FINISHING

Now the aprons and legs can be glued and clamped together. Before tightening the clamps, set the top in place to hold everything square.

**ADD THE TOP.** When the glue is dry, the top can be glued and clamped to the aprons. Since there isn't a good clamping surface on the top, place a piece of scrap wood across the width of the table top to use as a surface for the C-clamps.

**FINISHING.** I applied three coats of Hope's Tung Oil Varnish to the table top and two coats to the legs. This finish is very easy to apply and has just enough varnish in it to protect the top.



# Talking Shop

## AN OPEN FORUM FOR COMMENTS AND QUESTIONS

### CHAIR SEATS

*I have a woodworking question that I hope you can answer. I'm in the process of making a set of walnut bar stools, and so far, I've cut all of the pieces without any problems. But when it came time to hollow out the chair seat, I was stuck.*

*What I was hoping to do is dish out the seat similar to the old office chair seats. But I can't figure out the best method to do this (a router, or a sander?). Do you have any suggestions?*

*Ray Fort*
*Bloomfield, Iowa*

Whenever I'm faced with a task like this that requries a lot of work, my initial reaction is to grab the closest power tool. But there are times when power tools simply won't work. Hollowing-out a chair seat is one of those times.

In this case, you'll have to resort to traditional hand tools (and traditional methods) to get the job done. There are several hand tools that could be used: an adz, a scorp, and inshave, or even a carver's spoon gouge.

Traditionally, chair-makers used an adz (pronounced add's) to rough-out chair seats. An adz is an oldtimer's tool that looks something like a small garden hoe — the blade (either flat or curved) is at a 90° angle to the handle.

The chair-maker would stand on the edges of the seat blank, and swing the adz between his feet to rough out the hollow. However, if the adz fades off the mark and hits your foot, you'll lose a pair of shoes at best. Rather than skipping around the shop with a bloody foot, I'd rather just skip this step and use an inshave or a scorp to rough-out the seat.

An inshave is basically a two-handled draw knife with a curved blade that makes a concave cut. A scorp is kind of a small inshave; it has a single handle with a U-shaped cutting blade. Another tool that could be used is a carver's spoon gouge. (Of all these, I think my first choice would be a scorp.)

After the basic shape of the seat is roughed-out with one of these tools, the biggest headache is trying to smooth out the ridges. Here, I'd use a curved scraper blade. When I got the seat fairly smooth, I'd switch to a modern power tool, an orbital sander, to sand the chair seat absolutely smooth (to eliminate any chance of splinters in the hind-quarters).

All of these tools are available from either the Garrett Wade or Woodcraft Supply catalogs. (Addresses are given in the special catalog section of this issue.)

For more information on old tools and how they're used, an excellent source is the book *Old Ways of Working Wood* by Alex W. Bealer; $12.50 in the Garrett Wade catalog.

### SOURCES FOR TURNING FINISHES

We've received a lot of mail asking where to purchase Behlen's Salad Bowl Finish (used on the goblets, *Woodsmith* No. 23), and Renaissance Wax (used on the fruit Bowl, *Woodsmith* No. 21).

Both products can be purchased from either Woodcraft Supply or Garrett Wade. Their addresses are listed in the special catalog section in this issue.

One follow-up note I'd like to make about using the Renaissance wax for the fruit bowl: After using the bowl for a while, it's become apparent that Behlen's Salad Bowl finish would have been a better choice. In fact, from now on, whenever we make anything that comes in contact with food (like the Canister Set on page 10), this is the finish we'll use.

### A PLANE WARNING

*In* Woodsmith *No. 23, you described a method to tighten up the Y-yoke of a hand plane. Using your method, I removed the brass knob and used a screwdriver to crowbar one of the legs forward (so it touches the front shoulder of the groove), and the other leg back (until it touches the back shoulder of the groove).*

*As it turned out, the Y-yoke on my hand plane was made of cast iron. And as I was trying this procedure, one of the legs of the Y-yoke broke off. I think some sort of correction should be made so that no one else ruins a good plane using this procedure.*

*Raymond B. Wallace*
*Peoria, Illinois*

After reading Mr. Wallace's letter, I checked all of the planes in our shop to see if any had a cast iron Y-yoke. I did find one: my grandfather's 90-year-old wooden jointer plane. The mere thought of breaking the Y-yoke on that particular plane made me very nervous.

Other than this one jointer plane, all the other planes in our shop (we have about a dozen planes, some of them rather old), were equipped with a steel Y-yoke which can be bent without breakage.

However, I have to agree with Mr. Wallace that a warning should be made. Our recommendation is that if your plane has either a cast iron Y-yoke, or if you're not quite sure what type of metal it's made of, don't try to crowbar the legs of the Y-yoke with a screwdriver. After all, it's a lot better to live with a working plane that has a slightly sloppy adjustment than to have one with no adjustment at all.

### THE HAIR-LINE CRACK

In the article on the Mantel Clock (*Woodsmith* No. 24, page 8), we described a method of cutting glass to fit the odd shape of the clock door. We also mentioned how we got lucky before we ran out of glass. Well, we spoke too soon. Soon after the issue was sent to the printer, Dave noticed a small problem. The glass had a 6" hair-line fracture running right across the face of the dial.

Undaunted, I set out to try to cut the glass again. Unfortunately, this time I ran out of glass, twice. And in the process, I also ran out of patience. But I was too stubborn to admit defeat . . . there had to be a way.

I finally decided to try a piece of Plexiglas, just to see how it would work. And to be honest, I was pleasantly surprised.

The nicest thing about using Plexiglas is that it can be cut on a band saw, or with a sabre saw, just like a piece of plywood. This eliminated having to rely on Lady Luck when it came time to cut the arch.

After cutting out the arch in the Plexiglas (on the first try, by the way), I applied a coat of paste wax to both sides of my "unbreakable glass" to protect it from scratches. Then I installed it in the door frame of the clock.

To unknowing eyes, it looks exactly like I got lucky again.

### SHIFTY MITERS

*I tried the method of using sandpaper on the miter gauge fence to stop the pieces from creeping as described in* Woodsmith *No. 23. The only problem I had was that the grit of the sandpaper fell off, and scratched the top of my table saw.*

*I've found another method that works well for me. I simply apply double-faced tape to the miter fence. Then to prevent the stock from becoming overly attached to the miter fence, I coat the tape with a very fine dusting of sawdust.*

*Kenneth C. Hamm*
*Wisconsin Rapids, Wisconsin*

# Popcorn Bowl

## HOW TO TURN POPCORN INTO SOMETHING SPECIAL

Several years ago Sunday night meant one thing: watching *Bonanza* . . . with a big bowl of popcorn. I miss the weekly episodes of Bonanza, but the tradition of watching Sunday T.V. with a big bowl of popcorn is alive and well.

The only trouble is that my plastic popcorn bowl has finally begun to show its age. So I decided to turn a wooden replacement out of koa (a native hardwood of Hawaii). With the price of koa being what it is, I used the stave construction method described on page 8 to reduce the amount of lumber needed.



### THE BOWL

I wanted the popcorn bowl to be about 10" in diameter, and 4" in height (to hold lots of popcorn). So with these dimensions in hand, I drew out the profile on paper and found that I needed a twelve-sided cylinder with 2¾"-wide staves.

**THE CYLINDER.** To make a twelve-sided cylinder, the bevel on each piece is cut at 15°. After the pieces are bevel-ripped, they're cut to a rough length of 6" (to allow for some waste during the turning process). Then the cylinder is assembled, and mounted on the lathe using the method described on page 8.

**ATTACHING THE BASE.** After the cylinder is trued on the lathe, I reduced the thickness on the inside walls to ⅜". Then the base is mounted on the lathe, and a ⅝" wide rabbet is cut so the remaining shoulder fits the inside of the cylinder, see Fig. 3. Finally, the base and cylinder are clamped together using the tail stock of the lathe. (For a detailed description on turning a stave constructed bowl, see page 10.)

**THE INSIDE WALLS.** For this bowl, I wanted to taper the inside walls just slightly. I used a square-nosed scraper to taper the walls to ¼" thickness at the rim.

**THE FLOATING BASE.** The final step on the bowl is to create a "floating" base. To do this, I simply used a parting tool to undercut the remaining part of the rabbet on the base. (This is the shaded area in Fig. 3.) Then the bottom corner of the cylinder wall is chamfered, and the bowl is finish sanded and removed from the lathe.

### THE LID

There's really only one major difference between the lid for this popcorn bowl and the lids used for the canisters (page 10). The popcorn bowl lid has a double rabbet cut on the rim. This double rabbet keeps the outside edge of the lid ⅛" above the rim of the bowl, see Fig. 2. This gap visually separates the vertical grain of the bowl from the horizontal grain on the lid.

After the double rabbet is cut on the rim, I used a round-nosed scraper to form the neck around the knob.

Then I cut a slight hollow on top of the knob, and a gentle curve on the main body of the lid. Finally the lid is finished sanded, and separated from the faceplate.

To finish the popcorn bowl, I used three coats Behlen's Salad Bowl Finish.

FIGURE 1

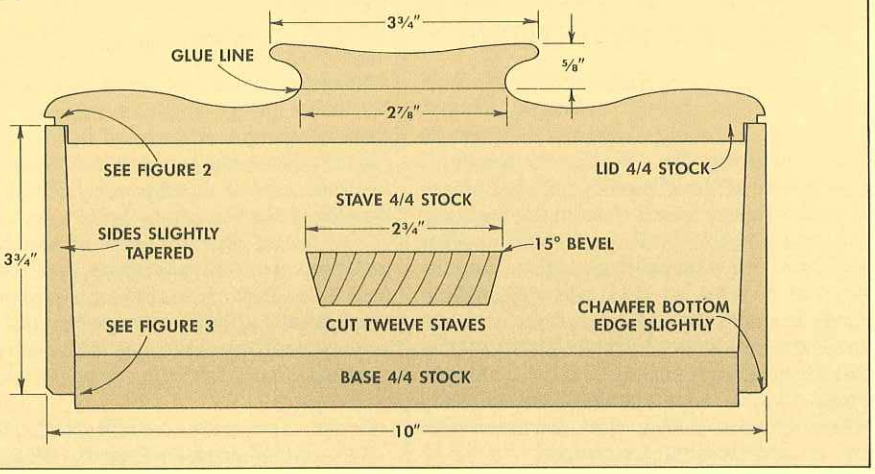



FIGURE 2

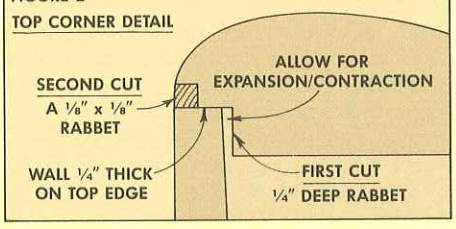



FIGURE 3

